A Stereo-Atlas of Ostracod Shells

edited by P. C. Sylvester-Bradley and David J. Siveter

Volume 2, 1974-5

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CONTENTS

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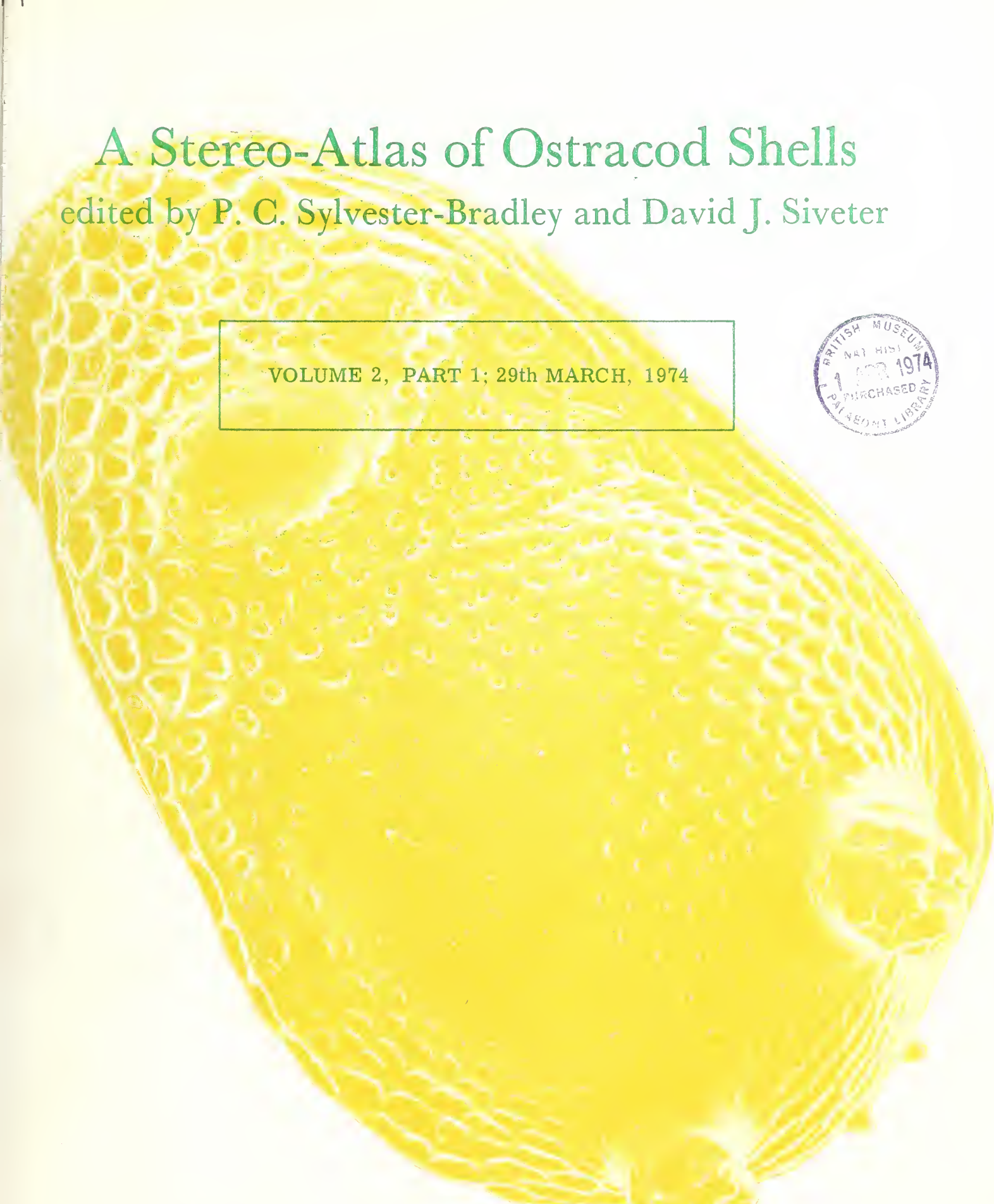
VOLUME 2, PART 1; 29th MARCH, 1974



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INSTRUCTIONS TO AUTHORS

Contributions illustrated by scanning electron micrographs of Ostracoda in stereo-pairs are invited. Full instructions may be obtained on request from the Editors. Format should follow the style set by the majority of papers in this issue. The Editors should be consulted for advice before figures for plates are mounted. Descriptive matter apart from illustrations should be cut to a minimum; preferably each plate should be accompanied by one page of text only.

Department of Geology, The University, Leicester.

STEREO-VIEWING FOR USERS OF THE ATLAS

In order to gain maximum information and benefit from the use of the *Stereo-Atlas* it is *essential* that the user view the micrographs stereoscopically. Small pocket-sized stereo-viewers are most suitable for this purpose; two suppliers of such viewers are given below.

C. F. Casella & Co. Ltd., Regent House. Britannia Walk, London, N1 7ND.
Pocket stereoscope, model T15010 (£1.25 each; excluding packing and carriage).

Air Photo Supply Corp., 158, South Station, Yonkers, New York 10705.
Pocket stereoscope, model PS-2 ($8.65 each; excluding postage and handling).

The scanning electron microscope in the Department of Geology of the University of Leicester was supplied by the Natural Environment Research Council under the terms of Grant No. GR/3/95 for the purpose of micropalaeontological research.

Plates printed by Broadwater Press Limited, Welwyn Garden City, Herts., England.

595.337.11 (116.212) (430.1:161.009.48): 551.351 + 552.523

ON *BAIRDIA HAHNI* LORD AND MOORLEY sp. nov.

by Alan Lord and A. Moorley
(University College, London and Exploration Logging International, Windsor, England)

Bairdia hahni sp. nov.

Holotype: Brit. Mus. (Nat. Hist.) IO 5994, LV.

Type locality: Clay pit at Reutlingen, Baden-Württemberg, Germany; long. 9°10'E, lat. 48°30'N. Pliensbachian, *P. spinatum* Zone, (Lias delta 2).

Derivation of name: In honour of Dr. Wolfgang Hahn (1936-1972), Geologisches Landesamt Baden-Württemberg.

Figured specimens: Brit. Mus. (Nat. Hist.) IO 5994 (LV: Pl. 2:1:2, fig. 1; Pl. 2:1:4, figs. 2, 3), IO 5995 (RV: Pl. 2:1:2, fig. 2), IO 5996 (LV: Pl. 2:1:4, fig. 1); all from same sample as holotype, clay of *P. spinatum* Zone at Reutlingen

Diagnosis: Elongate, coarsely reticulate species of *Bairdia* with short spines along raised edges of anterior and posteroventral margins.

Explanation of Plate 2:1:2

Fig. 1, LV ext. lat. (IO 5994, 680 µm long); fig. 2, RV ext. lat. (IO 5995, 570 µm long).

Scale A (150 µm ; ×133), fig. 1; scale B (200 µm ; ×155), fig. 2.

Remarks: An unusual species amongst Liassic Bairdiidae in that it is ornamented with a coarsely developed reticulation and possesses short bulky spines along the anterior and posteroventral margins. The spinose margins are themselves raised and are otherwise unornamented. Internal details poorly known.

One other ornamented *Bairdia* species is known from the Lower Jurassic, *B. clio* Bizon (Lower Pliensbachian of northern France; *Revue Micropaléont.*, 2, 1960), which is less elongate than *B. hahni*, has a different outline, in particular lacking a dorsally upturned posterior, and is ornamented with discrete tubercles rather than being reticulate. *Bairdia hahni* and *B. clio* are closely related, the former apparently having been developed from the latter. Reticulate species have been described from the Triassic (e.g. H. Bolz, *Senckenberg. leth.*, 52, 1971) as *Triebelina*, *Ptychobairdia*, etc., but at the moment it is preferred to place the present species in *Bairdia* in view of continuing work on the Triassic species.

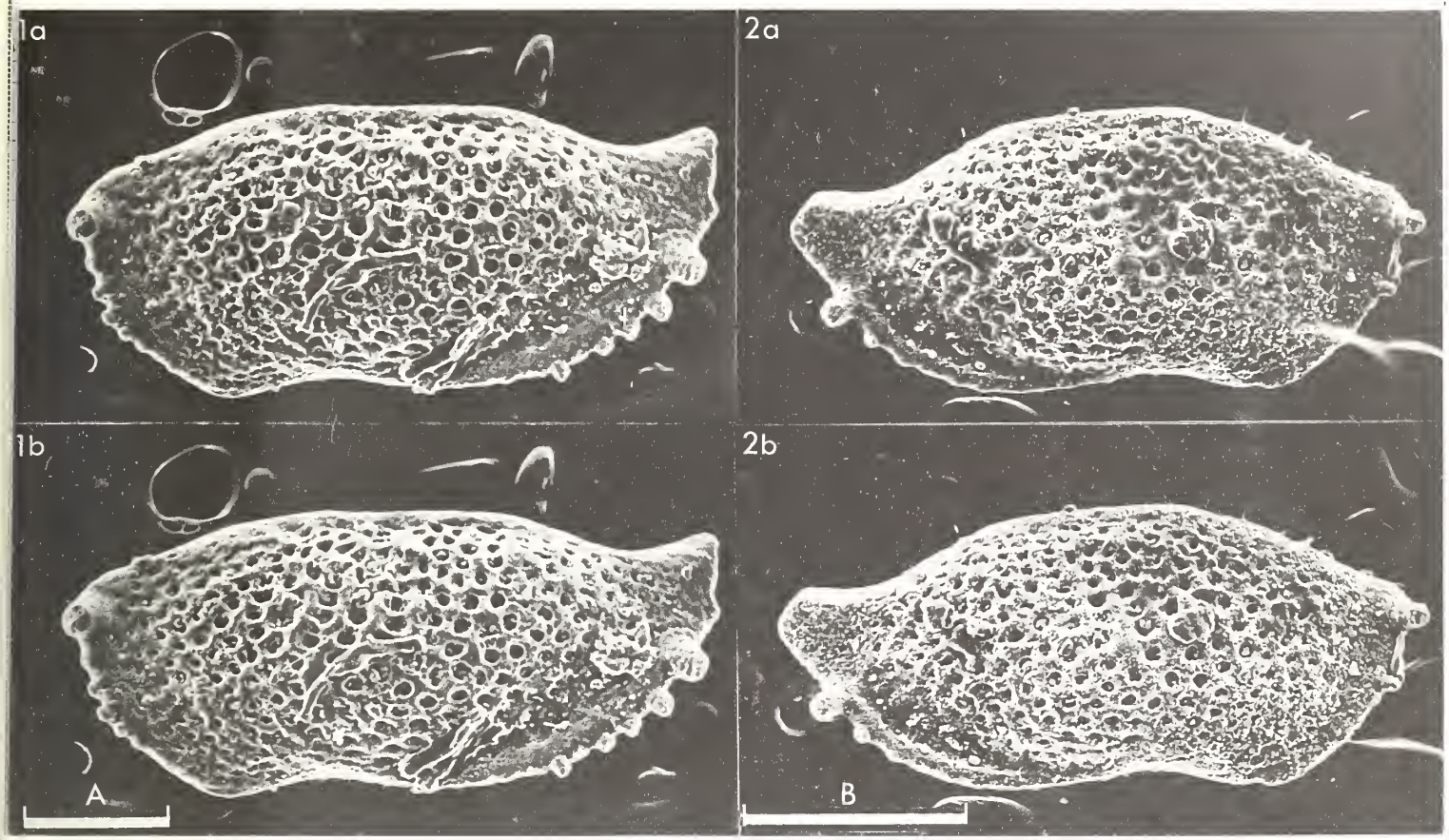
Associated with *B. hahni* is a rich Upper Pliensbachian assemblage containing *Bairdia aselfingenensis* sp. nov. (see *Stereo-Atlas of Ostracod Shells*, vol. 2, pt. 1, pp. 5-8, 1974) and *Ogmoconcha* spp. but with a noticeable absence of cytheracean species of the type assigned in the past to *Procytheridea*.

Explanation of Plate 2:1:4

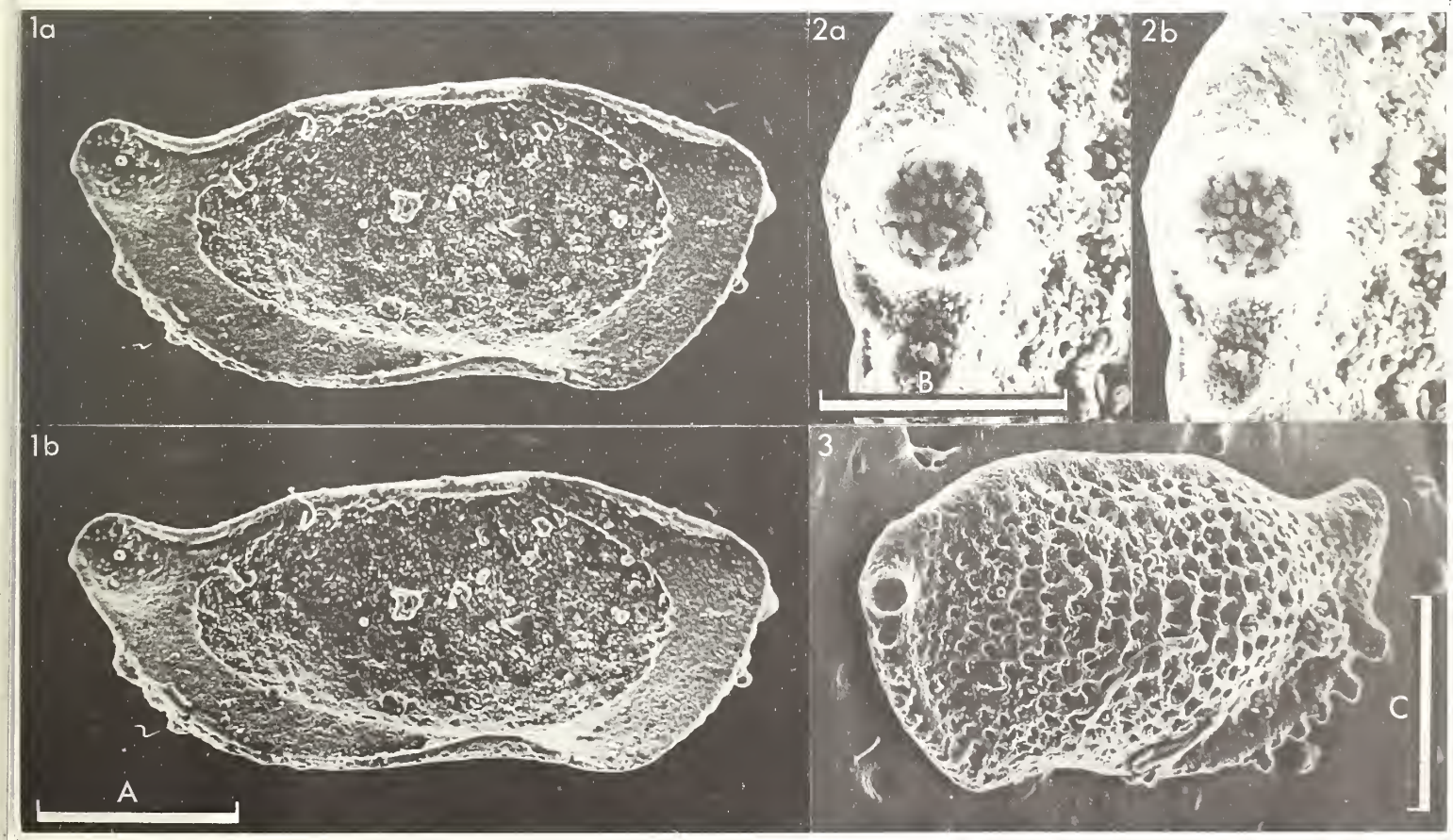
Fig. 1, LV int. lat. (IO 5996, 660 µm long); fig. 2, LV ext. ant. obl. detail (IO 5994); fig. 3, LV ext. ant. obl. (IO 5994).

Scale A (200 µm ; ×145), fig. 1; scale B (65 µm ; ×538), fig. 2; scale C (200 µm ; ×150), fig. 3.

Stereo-Atlas of Ostracod Shells, 2:1:2 *Bairdia hahni* (2 of 4)



Stereo-Atlas of Ostracod Shells, 2:1:4 *Bairdia hahni* (4 of 4)



595.337.11 (116.212) (430.1:161.008.47): 551.351 + 552.523

ON *BAIRDIA ASELFINGENENSIS* LORD AND MOORLEY sp. nov.

by Alan Lord and A. Moorley
(University College, London and Exploration Logging International, Windsor, England)

Bairdia aselfingenensis sp. nov.

Holotype: Brit. Mus. (Nat. Hist.) IO 5997, carapace.

Type locality: Aselfingen, Baden-Württemberg, Germany; long. 8°29'E, lat. 47°51'N. Pliensbachian, *P. spinatum* Zone, (Lias delta 2).

Derivation of name: From the locality of Aselfingen.

Figured specimens: Brit. Mus. (Nat. Hist.) IO 5997 (car.: Pl. 2:2:6, fig. 2; Pl. 2:2:8, figs. 2, 3), IO 5998 (car.: Pl. 2:2:6, fig. 1), IO 5999 (RV: Pl. 2:2:8, fig. 1); all from same sample as holotype, clay of *P. spinatum* Zone at Aselfingen.

Explanation of Plate 2:2:6

Fig. 1, car., ext. lt. lat. (IO 5998, 580 µm long); fig. 2, car., ext. rt. lat. (IO 5997, 700 µm long).

Scale A (200 µm ; ×150), fig. 1; scale B (200 µm ; ×125), fig. 2.

Diagnosis: An inflated species with a central depression, a well developed ridge along the dorsal margin and an extended, tube-like posterior process. Unornamented other than with the dorsal marginal ridge.

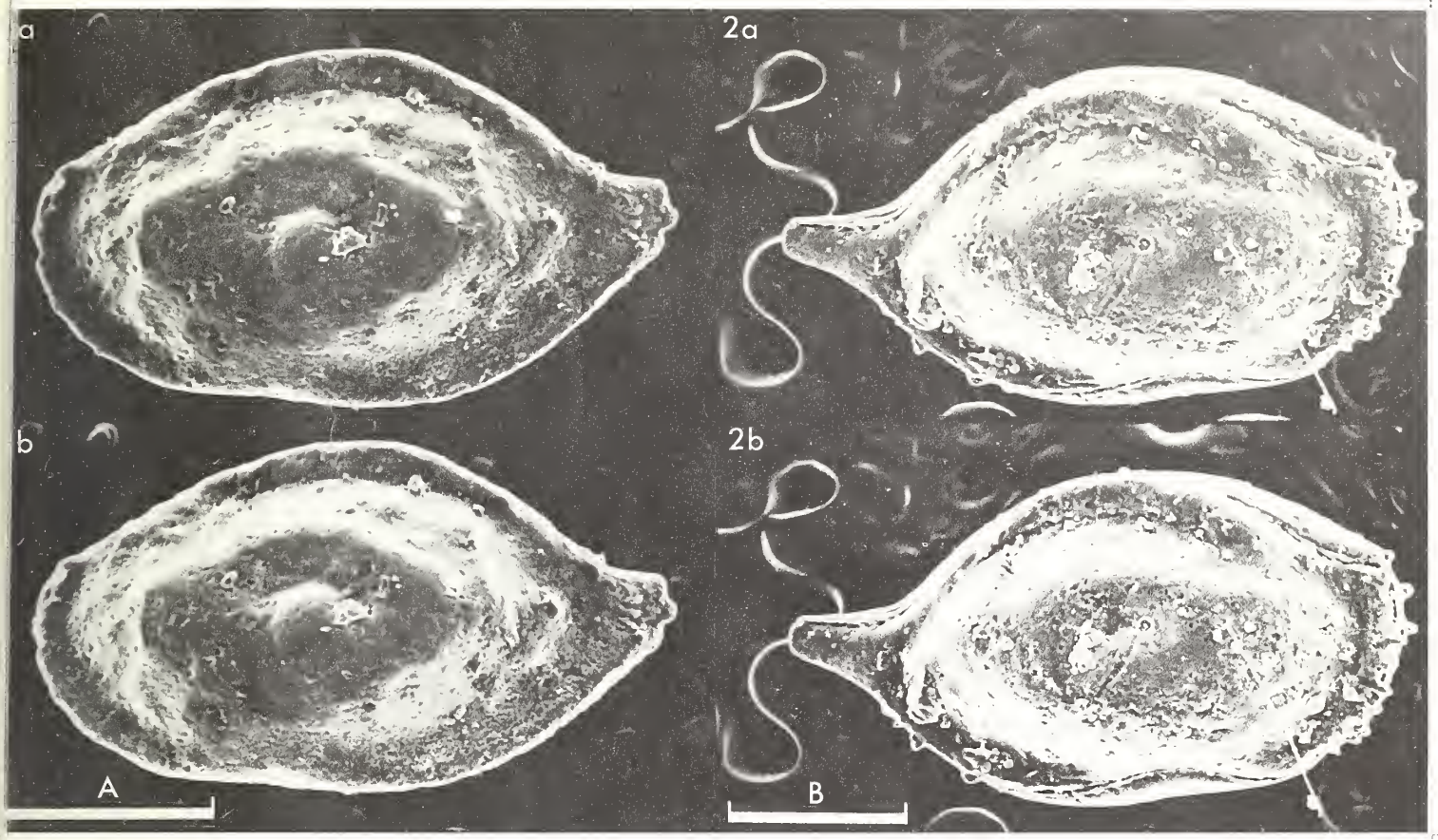
Remarks: This species also occurs at Reutlingen in association with *Bairdia hahni* sp. nov. (see *Stereo-Atlas of Ostracod Shells*, vol. 2, pt. 1, pp. 1-4, 1974) and is restricted to the *P. spinatum* Zone (Lias delta 2).

No other inflated, ribbed species of *Bairdia* is known from the Lower Jurassic and the closest forms are from the Triassic, from which a number of authors have described ribbed species (e.g. H. Kozur, *Geol. Paläont. Mitt. Insbruck*, 1, 1971). The present species differs from other Lower Jurassic *Bairdia* in being ribbed and prominently inflated, but is otherwise morphologically typical. Associated with *B. hahni* in the *P. spinatum* Zone at Reutlingen in the assemblage described with that species.

Explanation of Plate 2:2:8

Fig. 1, RV int. lat. (IO 5999, 610 µm long); fig. 2, car., ext. post. obl. (IO 5997); fig. 3, car., ext. ant. (IO 5997).

Scale A (200 µm ; ×125), fig. 1; scale B (200 µm ; ×100), fig. 2; scale C (200 µm ; ×125), fig. 3.


a
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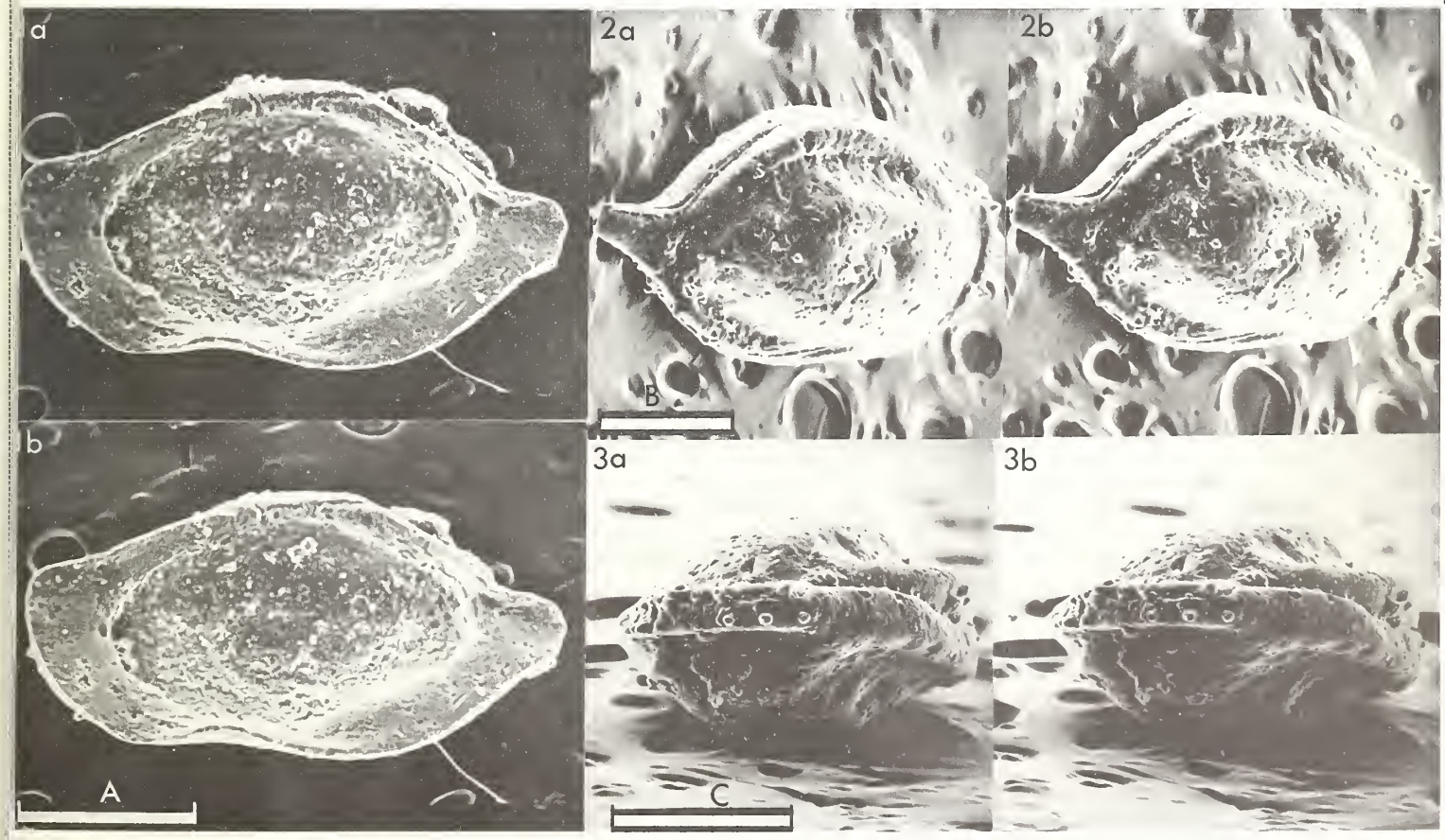
b
2b
A
B


a
2a
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B
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3a
3b
A
C

595.337.2 (116.212) (430.1:161.009.48): 551.351 + 552.523

ON *OGMOCONCHA AMBO* LORD AND MOORLEY sp. nov.

by Alan Lord and A. Moorley
(University College, London and Exploration Logging International, Windsor, England)

Ogmoconcha ambo sp. nov.

1962 Ostracod Nr. 12; W. Klingler, *Leitfossilien der Mikropaläontologie*, p. 104.
1962 ? Ostracod Nr. 13; W. Klingler, *ibid.*, pp. 99, 100.

Holotype: Brit. Mus. (Nat. Hist.) IO 5985, ♂ LV.

Type locality: Clay pit at Reutlingen, Baden-Württemberg, Germany; long. 9°10'E, lat. 48°30'N. Pliensbachian, *P. spinatum* Zone, (Lias delta 2).

Derivation of name: From the Greek *ambon*, rim or ridge.

Diagnosis: Surface relief of raised rim around anterior, ventral and posterior margins, with a mid-ventral threshold onto the mid-valve area.

Explanation of Plate 2:3:10

Fig. 1, ♂ LV, ext. lat. (IO 5985, 870 µm long); fig. 2, ♂ LV, int. lat. (IO 5988, 840 µm long).

Scale A (250 µm ; ×100), fig. 1; scale B (250 µm ; ×96), fig. 2.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. IO 5985 (♂ LV: Pl. 2:3:10, fig. 1), IO 5986 (♂ car.: Pl. 2:3:14, fig. 2; Pl. 2:3:16, fig. 2), IO 5987 (♂ RV: Pl. 2:3:12, fig. 3; Pl. 2:3:16, figs. 1, 4), IO 5988 (♂ LV: Pl. 2:3:10, fig. 2), IO 5989 (♀ LV: Pl. 2:3:12, fig. 2), IO 5990 (♀ RV: Pl. 2:3:12, fig. 1), IO 5991 (♀ LV: Pl. 2:3:16, fig. 3), IO 5992 (♀ RV: Pl. 2:3:14, fig. 1). [Unfigured paratype IO 5993, ♀ LV]. All from same sample as holotype, clay of *P. spinatum* Zone at Reutlingen.

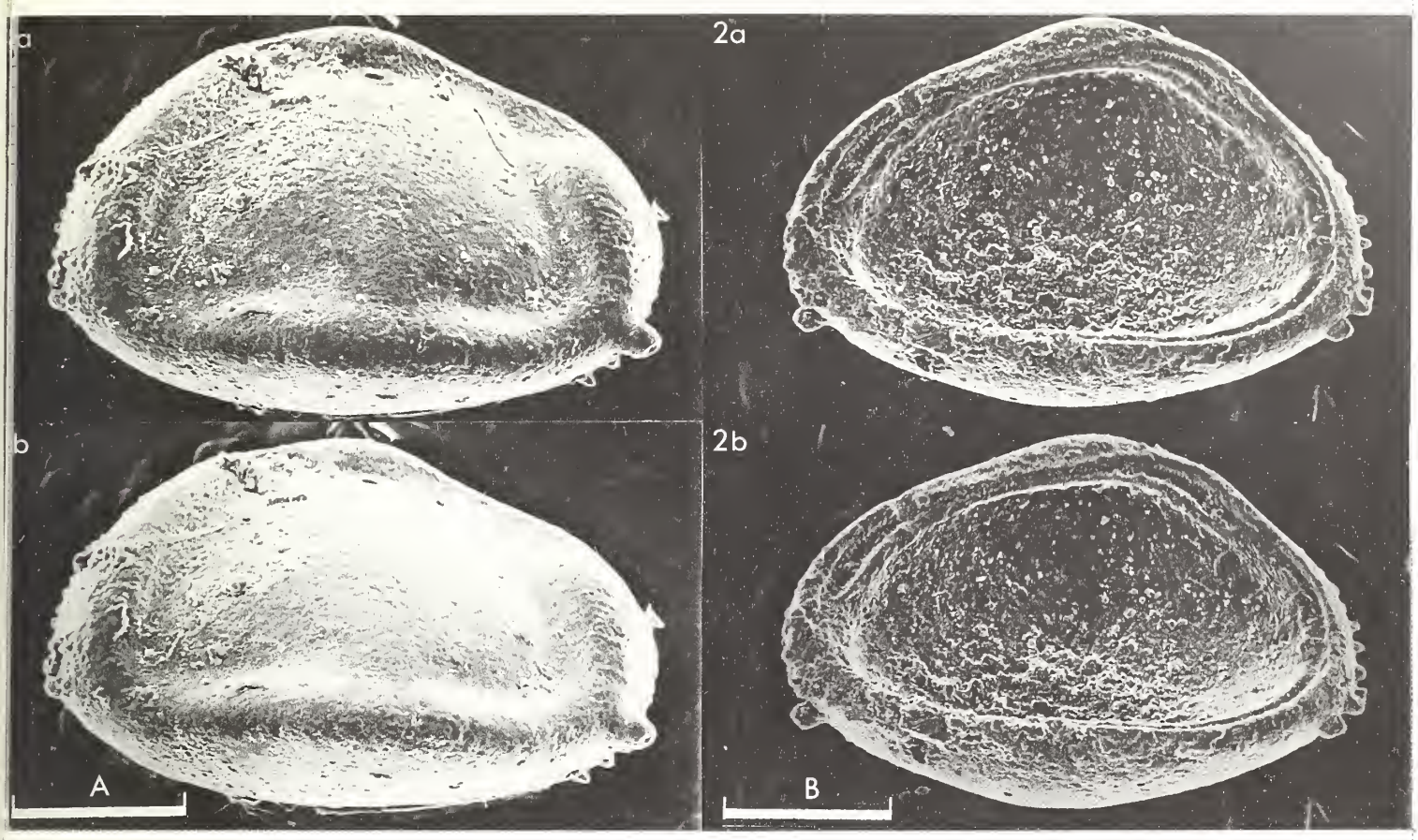
Remarks: Distinctive late species of *Ogmoconcha* restricted in our material to Lias delta 2 (*P. spinatum* Zone) and, as in Klingler's record, to S Germany.

In the earlier description (Klingler, 1962) the rim was compared to an Arabic '3' on the right valve and an indistinct Latin 'E' on the left valve, but in our material the median extension of the rim varied in strength allowing the appearance of a 'C' form rim; any other variation in configuration of the raised rim is related to valve shape which depends upon the left over right valve overlap and sexual dimorphism. Of 483 valves and 20 carapaces, muscle-scars visible in only one specimen, an apparently incomplete cluster of scars, and no reason to suppose that this is not an *Ogmoconcha* species.

Explanation of Plate 2:3:12

Fig. 1, ♀ RV, int. lat. (IO 5990, 800 µm long); fig. 2, ♀ LV, ext. lat. (IO 5989, 860 µm long); fig. 3, ♂ RV, int. lat. (IO 5987, 830 µm long).

Scale A (400 µm ; ×77), fig. 1; scale B (450 µm ; ×62), fig. 2; scale C (400 µm ; ×72), fig. 3.


a
2a
b
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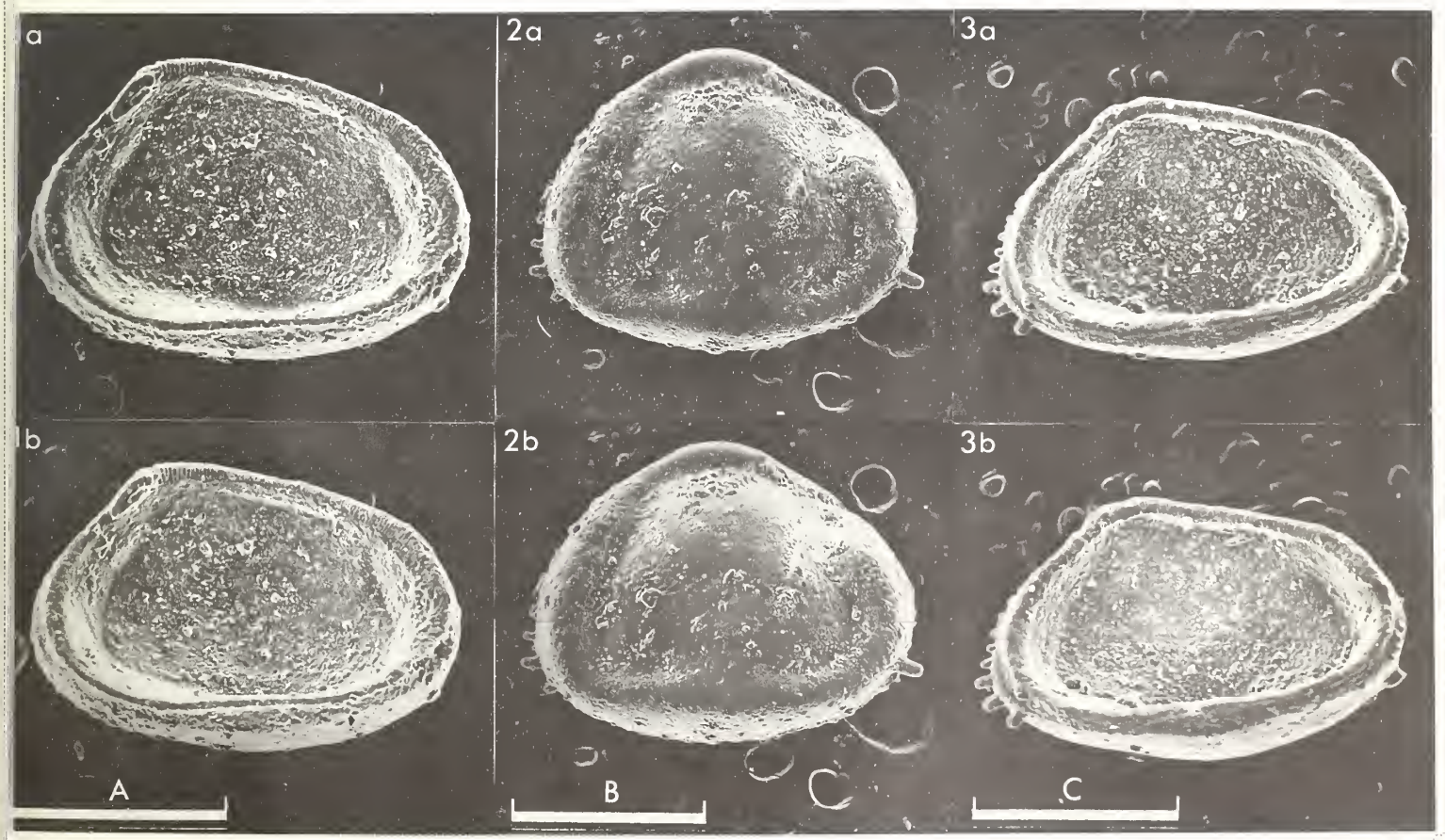
A
B


a
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3a
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2b
3b
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B
C

Remarks (contd.): Sexual dimorphism recognised (cf. ♂: Pl. 2:3:10, figs. 1, 2 with ♀: Pl. 2:3:12, fig. 2; Pl. 2:3:16, fig. 3). Ostracod Nr. 13 of Klingler appears similar to male of present material. However, Klingler describes Ostracod Nr. 13 from Lias gamma to delta whereas *O. ambo* is apparently restricted to Lias delta 2; this range discrepancy can be accounted for in a number of ways and it seems likely that Ostracods 12 and 13 are dimorphs of the same species. *Ogmoconcha ambo* appears early in Lias delta 2 and rapidly becomes dominant in assemblages which are notable also for the absence of cytheracean ostracods other than *Monoceratina*.

Distribution: Upper part of Middle Lias (Lias delta 2, *P. spinatum* Zone) of SW Germany. Two localities, in clays, at Reutlingen and Aselfingen, Baden-Württemberg.

Explanation of Plate 2:3:14

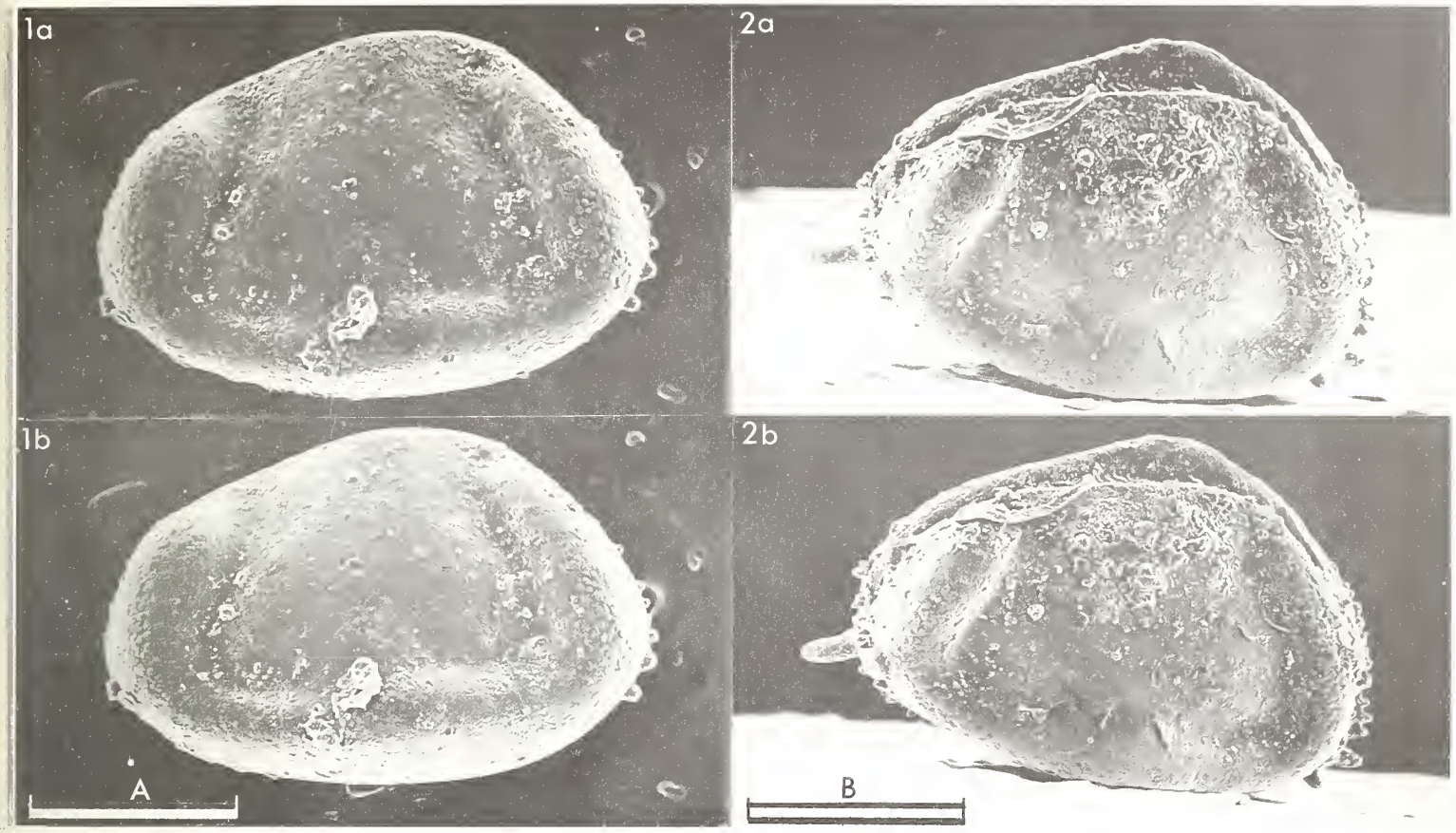
Fig. 1, ♀ RV, ext. lat. (IO 5992, 800 µm long); fig. 2, ♂ car., ext. rt. lat. (IO 5986, 860 µm long).

Scale A (300 µm ; ×97), fig. 1; scale B (350 µm ; ×90), fig. 2.

Explanation of Plate 2:3:16

Fig. 1, ♂ RV, post. obl. detail (IO 5987); fig. 2, ♂ car. ext. dors. (IO 5986); fig. 3, ♀ LV, int. lat. (IO 5991, 860 µm long); fig. 4, ♂ RV, ant. obl. detail (IO 5987).

Scale A (60 µm ; ×366), fig. 1; scale B (550 µm ; ×73), fig. 2; scale C (400 µm ; ×75), fig. 3; scale D (150 µm ; ×143), fig. 4.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A
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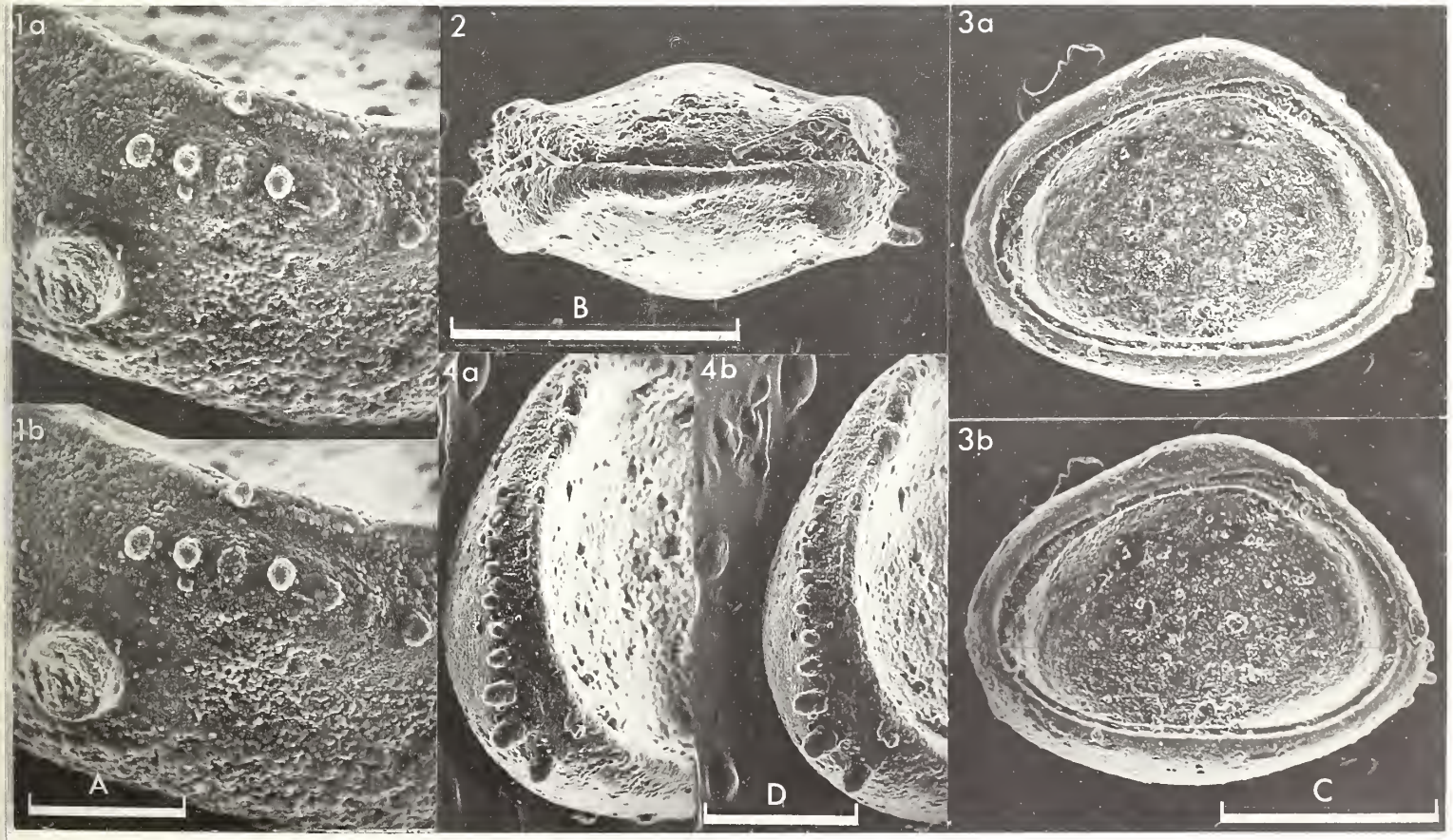
1a
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4b
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3b
B
A
D
C

595.337.12 (113.522) (428.1:162.002.54): 551.312 + 552.527

ON *CARBONITA CORRUGATA* GREGORY sp. nov.

by Diane Gregory
(Institute of Geological Sciences, Leeds, England)

Carbonita corrugata sp. nov.

1961 cf. *Hilboldtina sp.*; B. J. Taylor & M. A. Calver, *Bull. geol. Surv. Gt Br.*, no. 17, p. 12.

1966 *Carbonita evelinae* (Jones); J. E. Pollard, *Palaeontology*, vol. 9, pp. 686, 687, text-figs. 7a-d.

Holotype: Brit. Mus. (Nat. Hist.) IO 2985, carapace.

Type locality: Workings of Bearpark Colliery, Co. Durham, England. Nat. Grid Ref.: NZ 2419943352 (No. 2 Shaft). Upper Carboniferous, Westphalian A, Hopkins Band in roof of Harvey Coal. Grey shaly mudstone. Non-marine.

Derivation of name: Latin, "wrinkled".

Figured specimens: Brit. Mus. (Nat. Hist.) IO 2985 (car.: Pl. 2:4:18, figs. 1, 2; Pl. 2:4:20, fig. 2), IO 5982 (car.: Pl. 2:4:20, figs. 1, 3). Both from type locality.

Explanation of Plate 2:4:18

Fig. 1, car., ext. lt. lat. (IO 2985, 950 µm long); fig. 2, car., ext. vent. obl. (IO 2985).

Scale A (200 µm ; ×80), figs. 1, 2.

Diagnosis: Elongate - trapezoid; ornamentation of intermittent longitudinal ridges.

Remarks: Distinction between *C. corrugata* and *C. evelinae* is based on differences in ornament and lateral outline (for figures of *C. evelinae* see F. W. Anderson, *Bull. geol. Surv. Gt Br.*, no. 32, pp. 69-121, pl. XII, figs. 6-12, 1970). The longitudinal ornament of *C. evelinae* is composed of rows of closely set puncta, whereas that of *C. corrugata* is made up of distinct ridges and no punctation has been seen. *C. corrugata* has a smaller height:length ratio than *C. evelinae* and has a more sharply pointed posterior end. Its lateral outline is less evenly rounded.

Distribution: *C. corrugata* is apparently confined to beds of the *Anthraconaia modiolaris* Zone (upper Westphalian A and lower Westphalian B). *C. evelinae* is typically of *Anthraconauta tenuis* Zone age (Westphalian D), although apparently identical forms have been found as low as the upper *Anthracosia similis - Anthraconaia pulchra* Zone (lower Westphalian C). The two species do not overlap stratigraphically.

Explanation of Plate 2:4:20

Fig. 1, car., ext. rt. lat. (IO 5982, 950 µm long); fig. 2, car., detail of ornament (IO 2985); fig. 3, car., ext. dors. (IO 5982).

Scale A (200 µm ; ×74), figs. 1, 3; scale B (40 µm ; ×280), fig. 2.


1a
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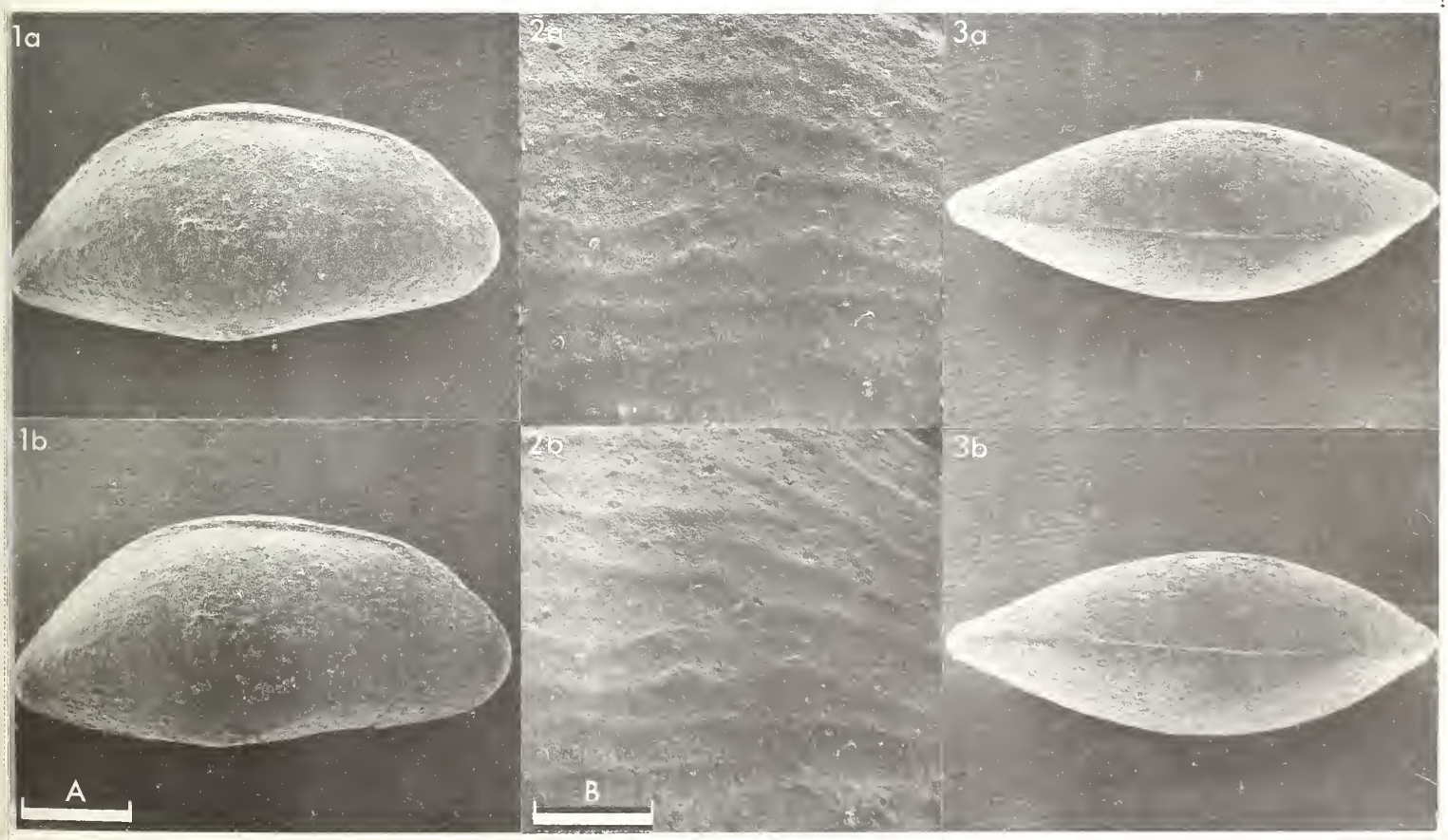
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2a
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1b
2b
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A
B

595.337.14 (119.1 + 119.9) (422.3:161.000.51 + 423.3:162.003.50 + 426.1:161.001.52 + 426.7:161.000.51 + 492:161.005.52): 551.312.4 + 551.313.1

ON *CYPRIDEIS TOROSA* (JONES)

by T. I. Kilenyi and J. E. Whittaker
(City of London Polytechnic and British Museum (Natural History), London)

Genus *CYPRIDEIS* Jones, 1857

Type-species (by original designation): *Candona torosa* Jones, 1850

Cyprideis torosa (Jones, 1850)

1850 *Candona torosa* sp. nov. T. R. Jones, *Ann. Mag. nat. Hist.*, ser. 2, vol. 6, p. 27, pl. III, figs. 6a-e.
1857 *Cyprideis torosa* (Jones); T. R. Jones, *Palaeontogr. Soc. (Monogr.)*, vol. for 1856, p. 21, pl. II, figs. la-i, woodcut fig. 2 (on p. 16).
1868 *Cytheridea littoralis* nom. nov. G. S. Brady, *Nat. Hist. Trans. Northumb.*, vol. 3, p. 125.
1870 *Cytheridea torosa* (Jones) var. *teres* var. nov. G. S. Brady & D. Robertson, *Ann. Mag. nat. Hist.*, ser. 4, vol. 6, p. 22 (including footnote by G. S. Brady, pp. 21, 22).

Explanation of Plate 2:5:22

Fig. 1, ♂ RV (noded), ext. lat. (IO 6002, 1010 µm long); fig. 2, ♀ LV (noded), ext. lat. (IO 6003, 950 µm long); fig. 3, ♀ RV (smooth), ext. lat. (IO 6004, 950 µm long).

Scale A (250 µm ; ×62), figs. 1-3.

1909 *Cytheridea pedaschenkoi* sp. nov. E. von Daday, *Trudy imp. S.-Peterb. Obshch. Estest.*, vol. 39, p. 24, pl. I, figs. 7-21, text-figs. 8a-f, 9.
1913 *Cytheridea torosa* (Jones) var. *lenta* var. nov. B. Zalányi, *Mitt. Jb. K. ung. geol. Anst.*, vol. 21, p. 120, pl. VI, figs. 18-20, text-figs. 4o, 20a, b.
1938 *Cyprideis litoralis* (Brady); W. Klie *in* F. Dahl, *Tierwelt Dtl.*, vol. 34, no. 3, p. 156, text-figs. 516-518. (Mis-spelling).
1964 *Cyprideis torosa* (Jones); P. A. Sandberg, *Stockh. Contr. Geol.*, vol. 12, p. 91, pl. X, figs. 18-20; pl. XI, figs. 1-10 (q. v. for detailed synonymy).

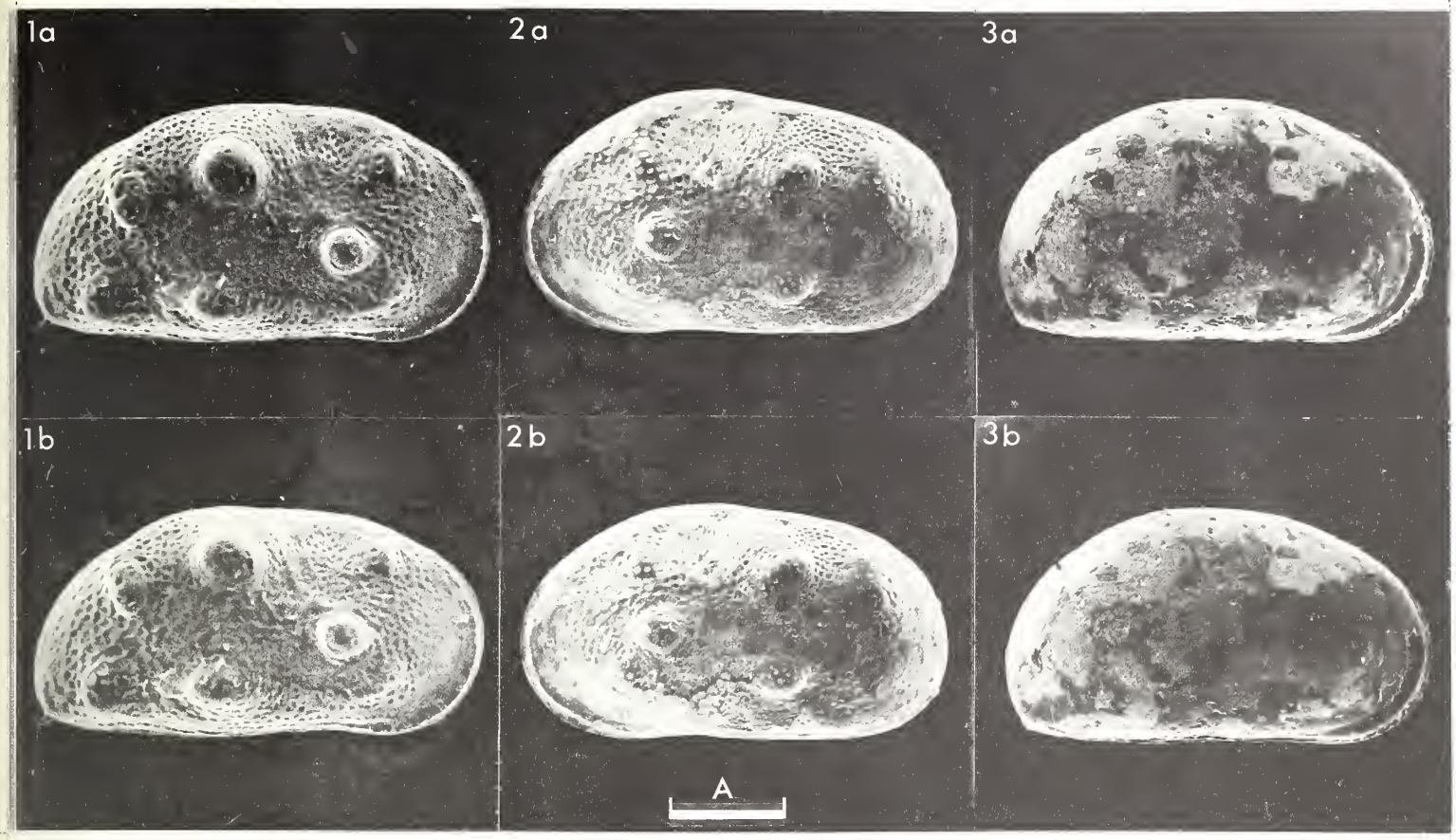
Lectotype: (here designated) Brit. Mus. (Nat. Hist.) no. IO 6002, ♂ RV (noded), from slide no. I 6466-9. Almost certainly the specimen figured by Jones, 1850, pl. III, fig. 6c; 1857, pl. II, fig. lb.
[Paralectotypes: IO 6003, ♀ LV (noded), from slide no. I 6466-9; IN 41844, ♂ LV (noded), now slightly damaged, not refigured in the present paper. These specimens are believed to be those figured by Jones in his 1850 (pl. III, fig. 6b) and 1857 (pl. II, fig. la) papers respectively].

Type locality: Pleistocene sands of Grays, Essex, SE England (long. 0°20'E, lat. 51°29'N).

Explanation of Plate 2:5:24

Fig. 1, ♀ car. (noded), ext. dors. (IO 6005, 1050 µm long); fig. 2, ♂ car. (noded), ext. dors. (IO 6006, 1160 µm long); fig. 3, ♀ car. (smooth), ext. dors. (IO 6007, 960 µm long).

Scale A (250 µm ; ×58), figs. 1-3.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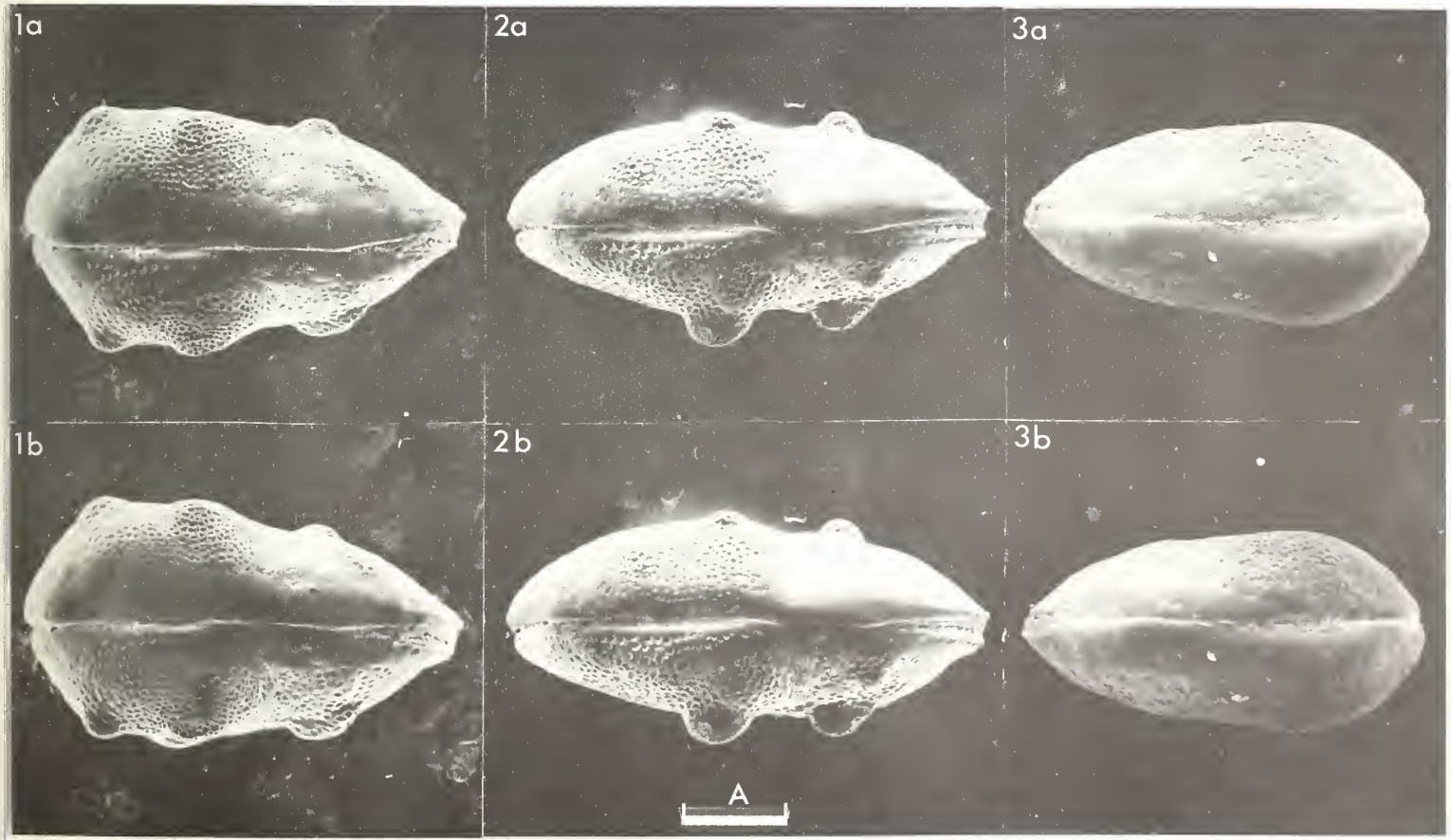
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2b
3b
A

Diagnosis: Female carapace sub-ovate in lateral view, but with a nearly straight venter; inflated posteriorly in dorsal view. Male more laterally elongate, the dorsal margin having more pronounced cardinal angles; subparallel in dorsal view, tapering evenly at extremities. Valves of both adults and juveniles variably punctate, sometimes nodose with up to 7 sites of lateral tubercular development on each adult valve (see text-fig. 1). Dorso-median sulcus weak. Posteroventral spine usually strongly developed on right valve.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. IO 6002 (♂ RV: Pl. 2:5:22, fig. 1), IO 6003 (♀ LV: Pl. 2:5:22, fig. 2), IO 6004 (♀ RV: Pl. 2:5:22, fig. 3), IO 6005 (♀ car.: Pl. 2:5:24, fig. 1; Pl. 2:5:32, fig. 3), IO 6006 (♂ car.: Pl: 2:5:24, fig. 2; Pl. 2:5:32, fig. 2), IO 6007 (♀ car.: Pl. 2:5:24, fig. 3; Pl. 2:5:32, fig. 1), IO 6008 (♀ LV: Pl. 2:5:26, figs. 1, 3), IO 6009 (♀ RV: Pl. 2:5:26, fig. 2), IO 6010 (♂ RV: Pl. 2:5:30, fig. 1), IO 6011 (♀ LV: Pl. 2:5:30, fig. 2), IO 6012 (juv-1 RV: Pl. 2:5:26, fig. 4), IO 6013 (juv-1 RV: Pl. 2:5:28, fig. 1), IO 6014 (juv-1 RV: Pl. 2:5:28, fig. 2), IO 6015 (juv-1 RV: Pl. 2:5:28, fig. 3). IO 6002 and IO 6003 from type locality. IO 6004 from slide no. 50.42, Gravesend ditches, Kent, SE England (long. 0°25'E, lat. 51°26'N); Recent; one of the original specimens of the smooth form given to Jones by a Mr. Pickering (see Jones 1850, 1857).

Explanation of Plate 2:5:26

Fig. 1, ♀ LV (smooth), int. lat. hinge (IO 6008, 1000 µm long); fig. 2, ♀ RV (smooth), int. lat. hinge (IO 6009, 930 µm long); fig. 3, ♀ LV (smooth), int. musc. sc. (IO 6008); fig. 4, juv-1 RV (smooth), ext. lat. (IO 6012, 750 µm long).

Scale A (250 µm ; ×80), figs. 1, 2, 4; scale B (100 µm ; ×160), fig. 3.

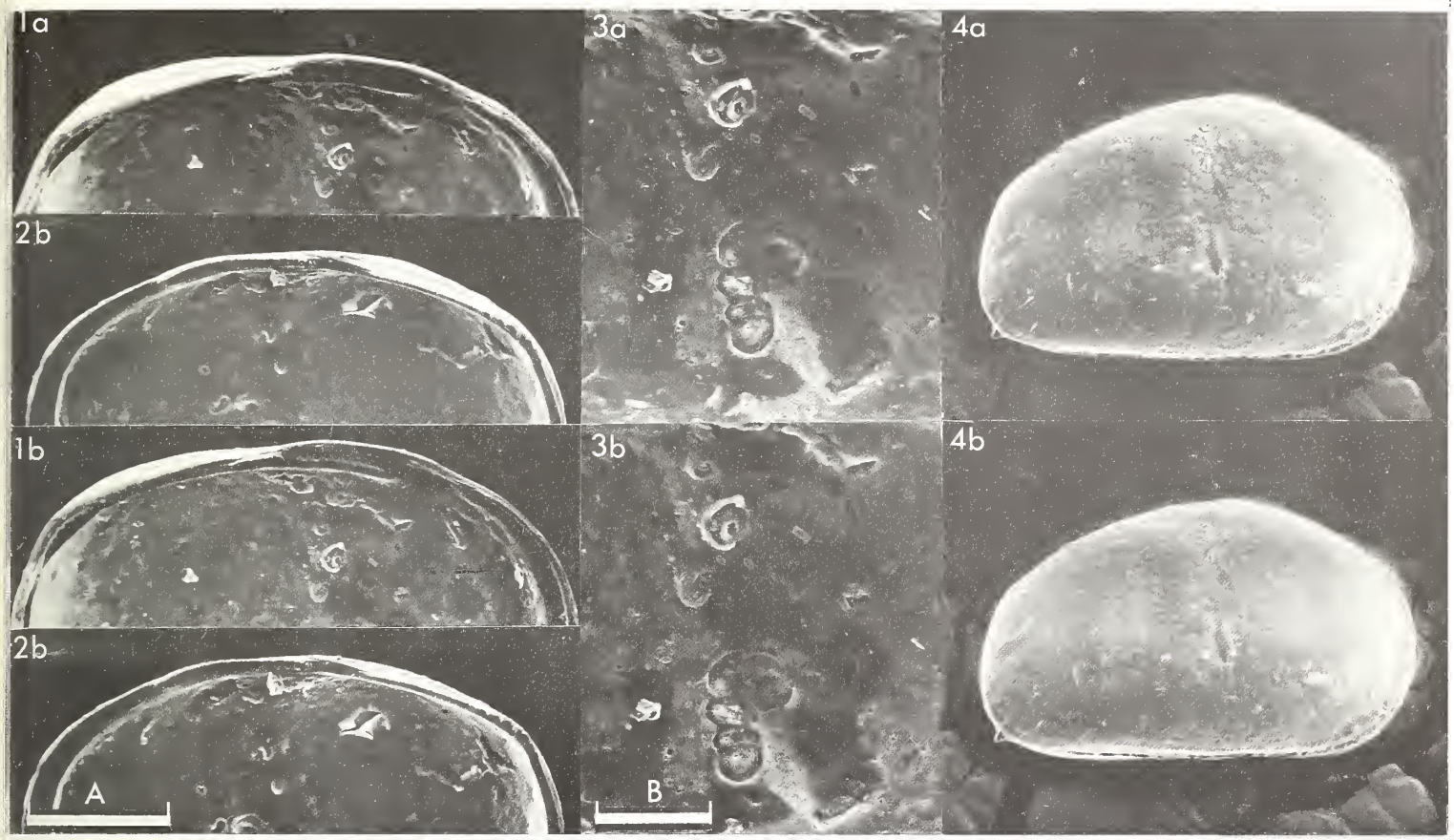
Figured specimens (contd.): IO 6005, IO 6006 from Wroxham Broad, Norfolk, E England (long. 1°24'E, lat. 52°42'N); Recent, freshwater; from Norman Coll. (1911.11.8) slide no. M 3431 in Brit. Mus. (Nat. Hist.), coll. Oct. 1869. IO 6007 from Decoy Point, Blackwater Estuary, Essex, SE England (long. 0°45'E, lat. 51°43'N); Recent, salinity 8‰; coll. T. I. Kilenyi. IO 6008 - IO 6012 from Abbotsbury Swannery, Fleet, Dorset, S England (long. 2°36'W, lat. 50°39'N); Recent, salinity 3‰; coll. J. E. Whittaker. IO 6013, IO 6014 from Zuider Zee deposits, E Flevoland Polder, Holland (long. 5°40'E, lat. 52°35'N); sub-Recent; coll. J. E. Robinson. IO 6015 from Greenlands Quarry, Purfleet, Essex, SE England (long. 0°15'E, lat. 51°29'N); *Unio* bed, Pleistocene sands (? Hoxnian); coll. T. I. Kilenyi.

Remarks: Name: See Sandberg's comprehensive historical review of this complex nomenclatural problem (1964, pp. 81-85). We regard both noded and smooth forms of *C. torosa* as a single species. The nature of variation and their sympatric occurrence precludes the possibility of there being two separate subspecies. *C. littoralis* (Brady) is clearly a junior synonym, but it was perpetuated, particularly in zoological literature, until quite recently. Brady himself withdrew the name in a footnote to his paper with Robertson (1870, pp. 21, 22). Unfortunately, his explanation seems to have been generally overlooked.

Explanation of Plate 2:5:28

Figs. 1-3, variation in node pattern. Fig. 1, juv-1 RV, ext. lat. (IO 6013, 770 µm long); fig. 2, juv-1 RV, ext. lat. (IO 6014, 700 µm long); fig. 3, juv-1 RV, ext. lat.(IO 6015, 710 µm long).

Scale A (250 µm ; ×80), figs. 1-3.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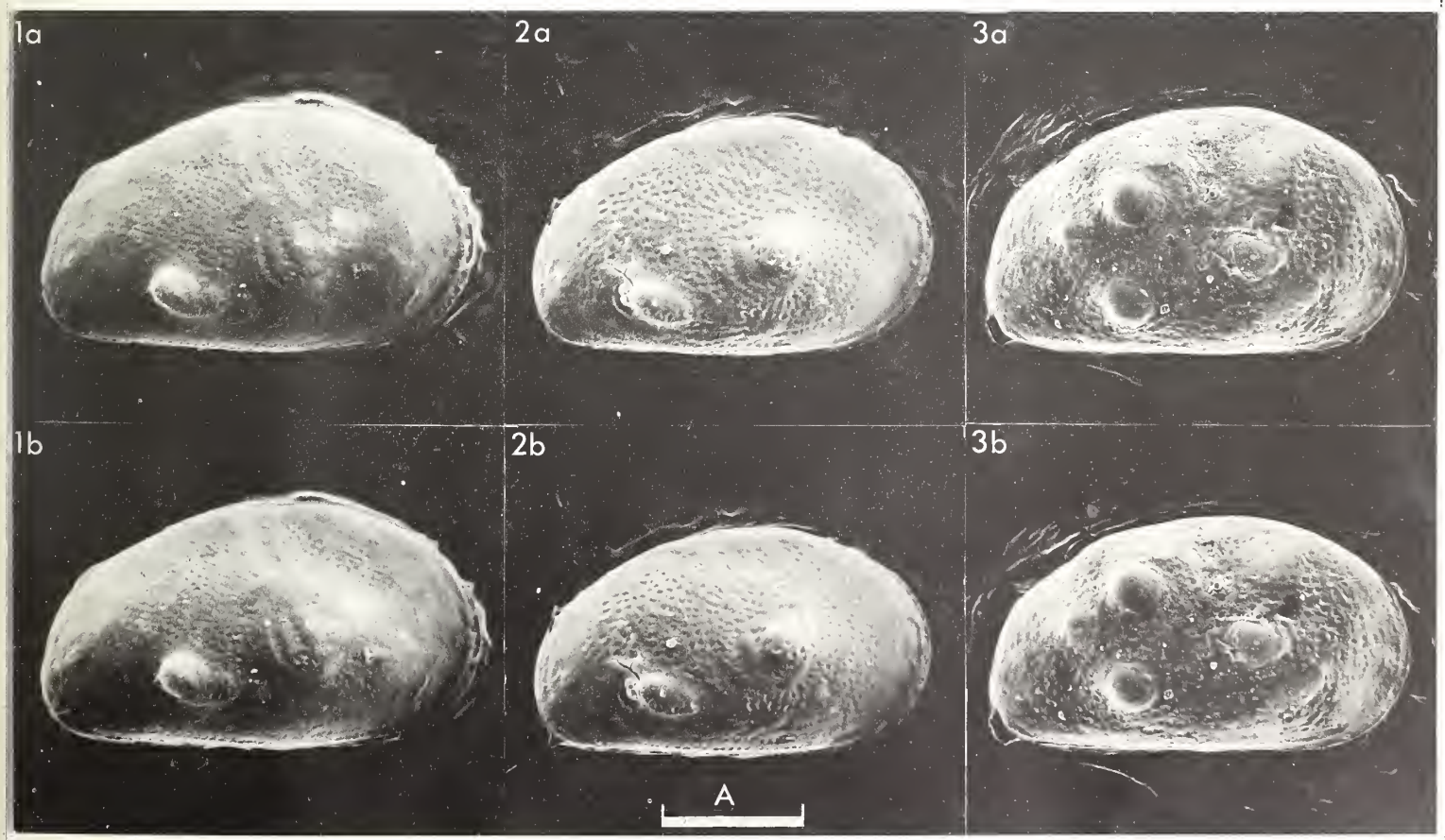
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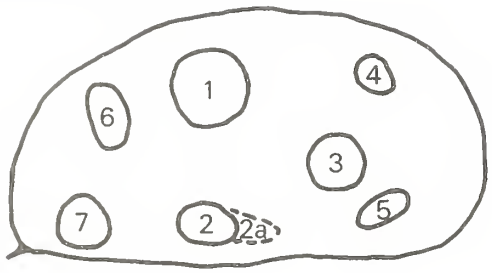
Remarks (contd.):

Text-fig. 1



♂ RV, notation of nodes (after Sandberg, 1964).

Noding: The considerable literature concerning low salinity and noding in ostracods has been reviewed by one of us (Kilenyi, *Micropaleontology*, vol. 18, pp. 47-63, 1972) with particular reference to *C. torosa* and it is concluded that this is a case of balanced genetic polymorphism and is not a straightforward physiological reaction to lowered salinity. Nodes can occur at seven discrete sites on the valve (see text-fig. 1, after Sandberg, 1964). Node 2 may be the only one developed, but it is usually accompanied by no. 1 and often by no. 3 also; these three form the "basic triangle". Beyond this triangle, no. 6 is the most frequent, followed by no. 4; the remaining two nodes (nos. 5 and 7) are developed very rarely. The total complement of 7 nodes in this species has only been seen by us in the Grays-Purfleet Pleistocene material (see Pl. 2:5:22, fig. 1). Nodes 4-7 are never developed in the absence of the basic triangle.

Explanation of Plate 2:5:30

Fig. 1, ♂ RV (smooth), int. lat. showing soft-parts (IO 6010, 1060 µm long); fig. 2, ♀ LV, int. lat. showing soft-parts (IO 6011, 1020 µm long), note posterior saddle-shaped platform with eggs.

Scale A (250 µm ; ×80), figs. 1, 2.

Distribution: Found in salinities of 0.1‰->60‰ in inland ponds, lakes, lagoons, estuaries, fjords, deltas and other marginal marine environments down to a depth of *c.* 30 m. The preferred substratum appears to be mud or sandy mud, but it sometimes lives on algae. The species is eurythermal i.e. in water temperatures of 0° to *c.* 25°C.

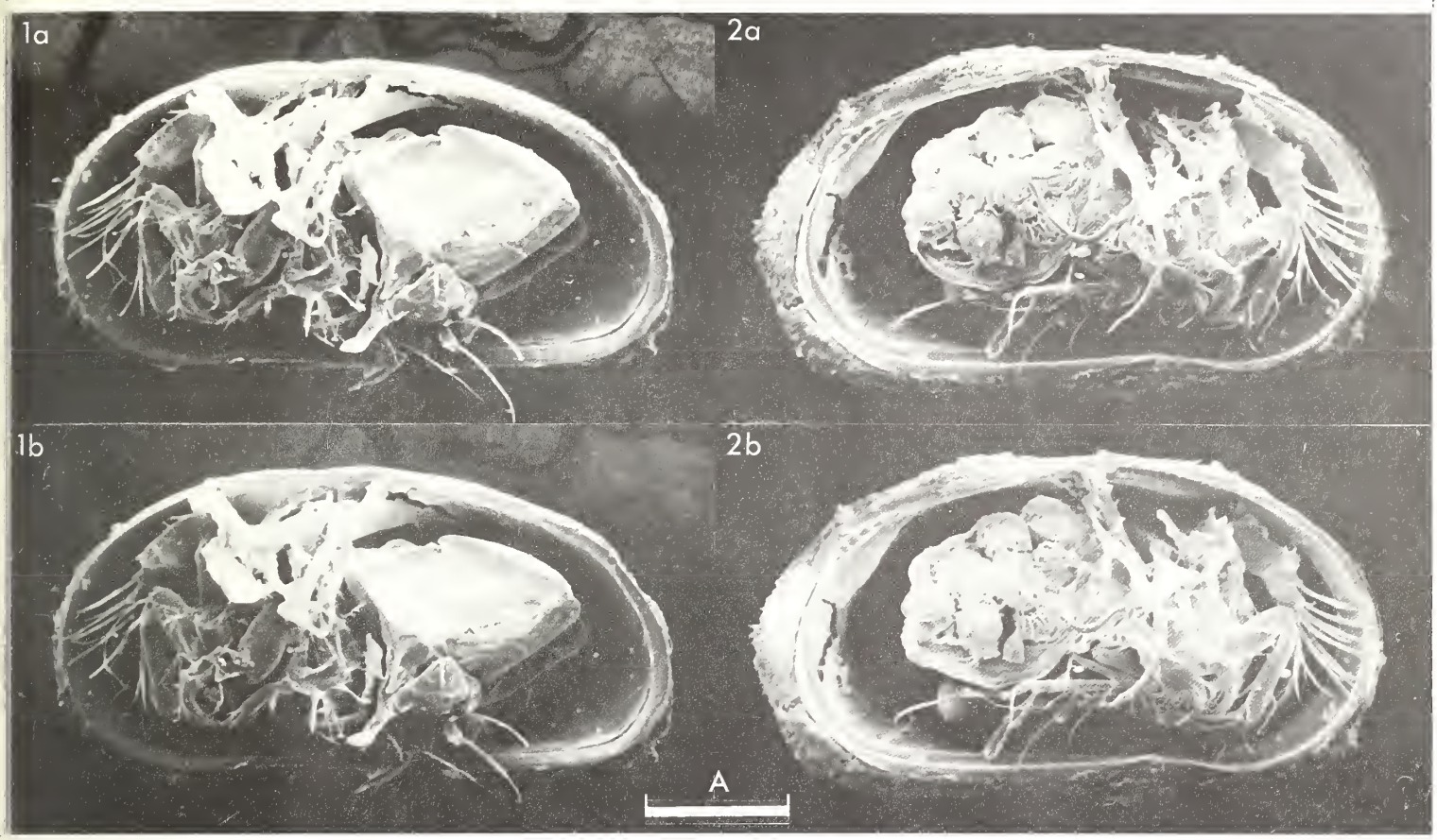
Widespread throughout Europe (N as far as Iceland), W and Central Asia, and the Mediterranean region of the Middle East and N Africa. A new record is provided by Dr. S. B. Bhatia, Punjab Univ., from N India [material in Brit. Mus. (Nat. Hist.)]; the specimens are believed to be sub-Recent. Prof. G. Hartmann of Hamburg kindly sent us a male (with soft-parts) from Lake Rudolph, Kenya, which we can confirm as being valid. Forms assigned to *C. torosa* in N America, however, are undoubtedly different species.

The stratigraphical range is somewhat more difficult to establish. The earliest record of the species is given by Zalányi (1913) who described *C. torosa* var. *lenta* from the lower Sarmatian of Hungary. There are several occurrences from the Pliocene sediments of Central Europe and it seems to become widespread in the Pleistocene over Europe and Asia.

Explanation of Plate 2:5:32

Fig. 1, ♀ car. (smooth), post. dors. region showing simple pore & setal tassel (IO 6007); fig. 2, ♂ car. (noded), mid. dors. region showing sieve-type pore & puncta (IO 6006); fig. 3, ♀ car., dors. view of node 3 on RV (IO 6005).

Scale A (10 µm ; ×1500), fig. 1; scale B (20 µm ; ×750), figs. 2, 3.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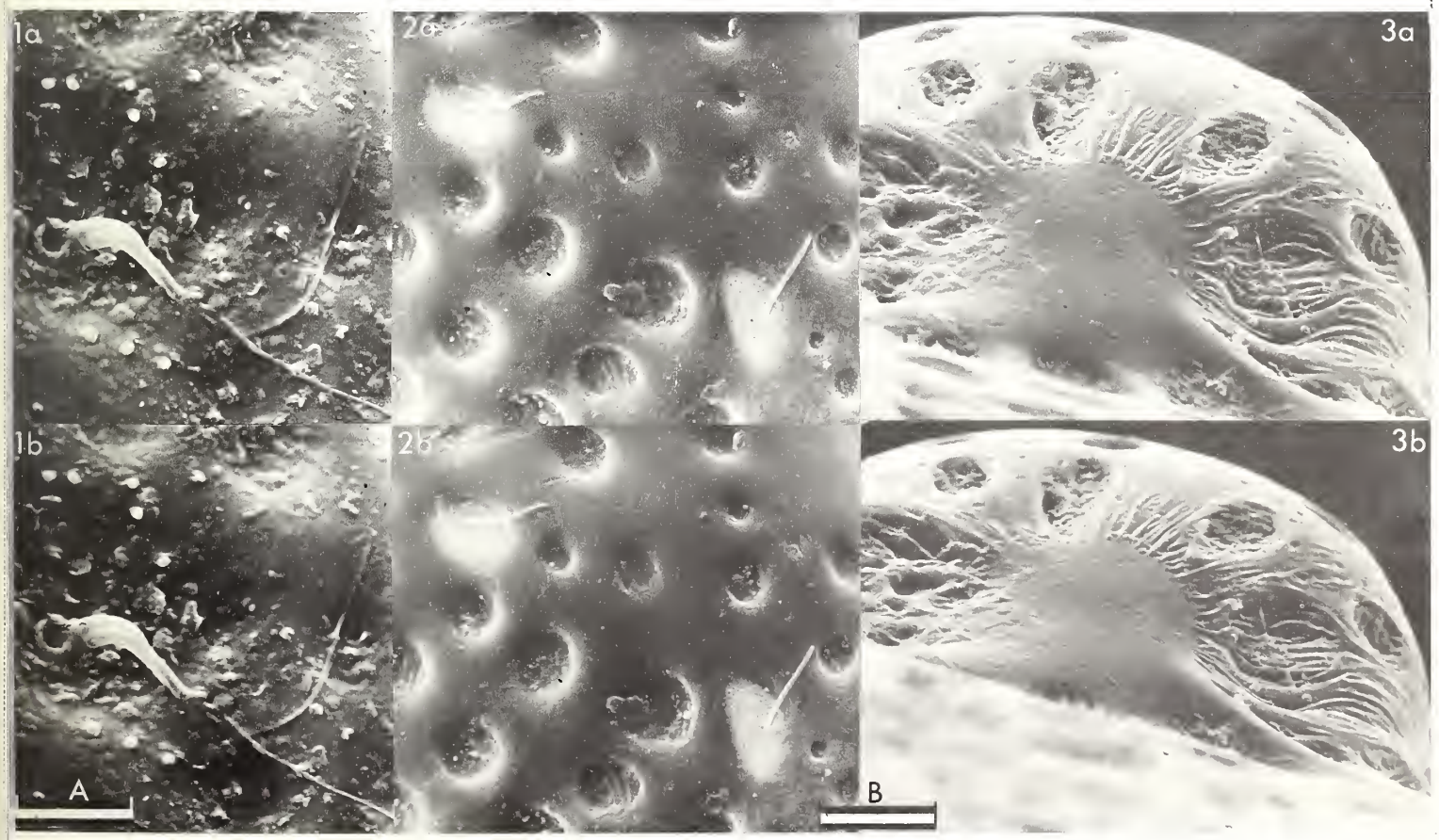
2b
A


1a
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A
B

595.337.14 (118.22 + 119.9) (262.4:161.026.38 + 454:161.009.44 + 560:161.035.37): 551.351 + 552.513

ON *UROCYTHEREIS FAVOSA* (ROEMER)

by Neriman Doruk
(University of Leicester, England)

Genus *UROCYTHEREIS* Ruggieri, 1950

Type-species (original designation): *Cytherina favosa* Roemer, 1838

Diagnosis: Carapace elongate-ovate or subquandrangular, surface coarsely reticulate or foveolate. Valves heavily calcified. Inner lamella moderately wide, marginal pore canals numerous. Hinge amphidont/heterodont. Normal pores large and sieve type; 2-3 frontal scars, 4-7 adductor scars.

Explanation of Plate 2:6:34

Fig. 1, ♀ RV, ext. lat. (IO 5854, 775 µm long); fig. 2, ♂ LV, ext. lat. (IO 5855, 900 µm long); fig. 3, detail of caperate solum & sieve-plates (IO 5855).

Scale A (250 µm ; ×105), fig. 1; scale B (250 µm ; ×88), fig. 2; scale C (20 µm ; ×616), fig. 3.

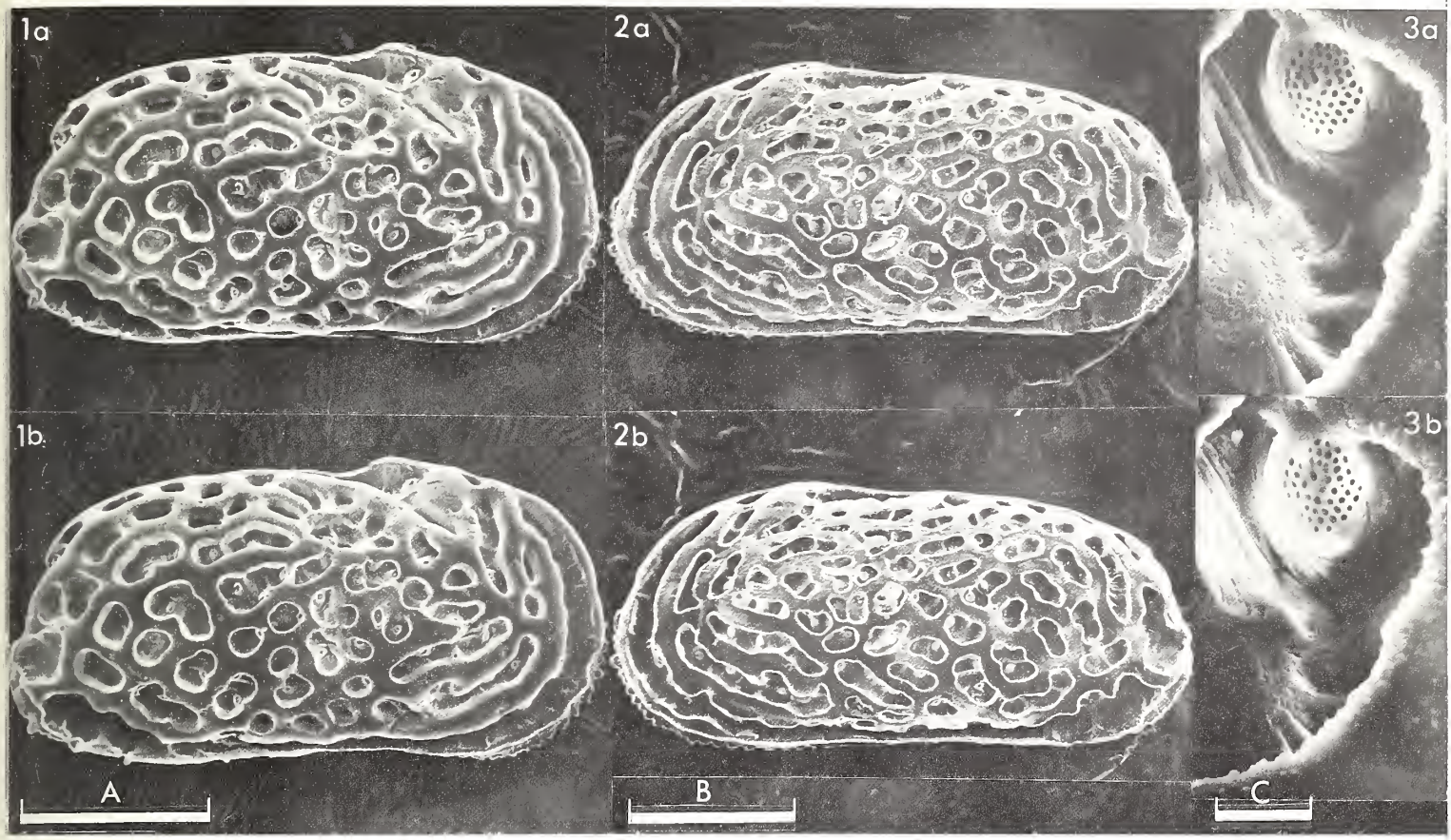
Urocythereis favosa (Roemer, 1838)

1838 *Cytherina favosa* F. Roemer, *Neues Jb. Miner. Geog. Geol. Pet.*, p. 516, pl. 6, fig. 7.
1880 *Cythere sororcula* G. Seguenza, *Atti Accad. naz. Lincei Memorie*, ser. 3, vol. 6, pp. 192, 289, pl. 14, fig. 18.
1900 *Cythere mirabilis* G. Capeder, *Atti Accad. Sci., Torino*, vol. 35, p. 10, figs. 18a, b.
1950 *Urocythereis favosa* (Roemer); G. Ruggieri, *G. Geol.*, ser. 2, vol. 21, p. 28, pl. 1, fig. 4, text-figs. 10-14.
1969 *Urocythereis favosa favosa* (Roemer); F. Uliczny, *Hemicytheridae und Trachyleberididae aus dem Pliozän der Insel Kephallinia*, Dissertation Univ. Munich, p. 61.
1969 *Urocythereis favosa exedata* F. Uliczny, *ibid.*, p. 62, pl. 4, fig. 5; pl. 15, fig. 4.
1969 *Urocythereis sororcula* (Seguenza); F. Uliczny, *ibid.*, p. 67, pl. 4, fig. 8; pl. 16, fig. 1.
1972 *Urocythereis favosa favosa* (Roemer); W. Sissingh, *Bull. Micropaleontol. Utrecht*, no. 6, p. 127.
1972 *Urocythereis favosa exedata* Uliczny; W. Sissingh, *ibid.*, p. 127, pl. 10, fig. 6.
1972 *Urocythereis sororcula* (Seguenza); W. Sissingh, *ibid.*, p. 128, pl. 10, fig. 9.

Explanation of Plate 2:6:36

Fig. 1, ♀ LV, int. lat. (broken, 820 µm long); fig. 2, ♂ RV, int. lat. (IO 5856, 780 µm long); fig. 3, detail of papillate solum, foveolate muri & rimmed sieve-plates (IO 5857).

Scale A (250 µm ; ×87), fig. 1; scale B (250 µm ; ×89), fig. 2; scale C (20 µm ; ×546), fig. 3.


1a
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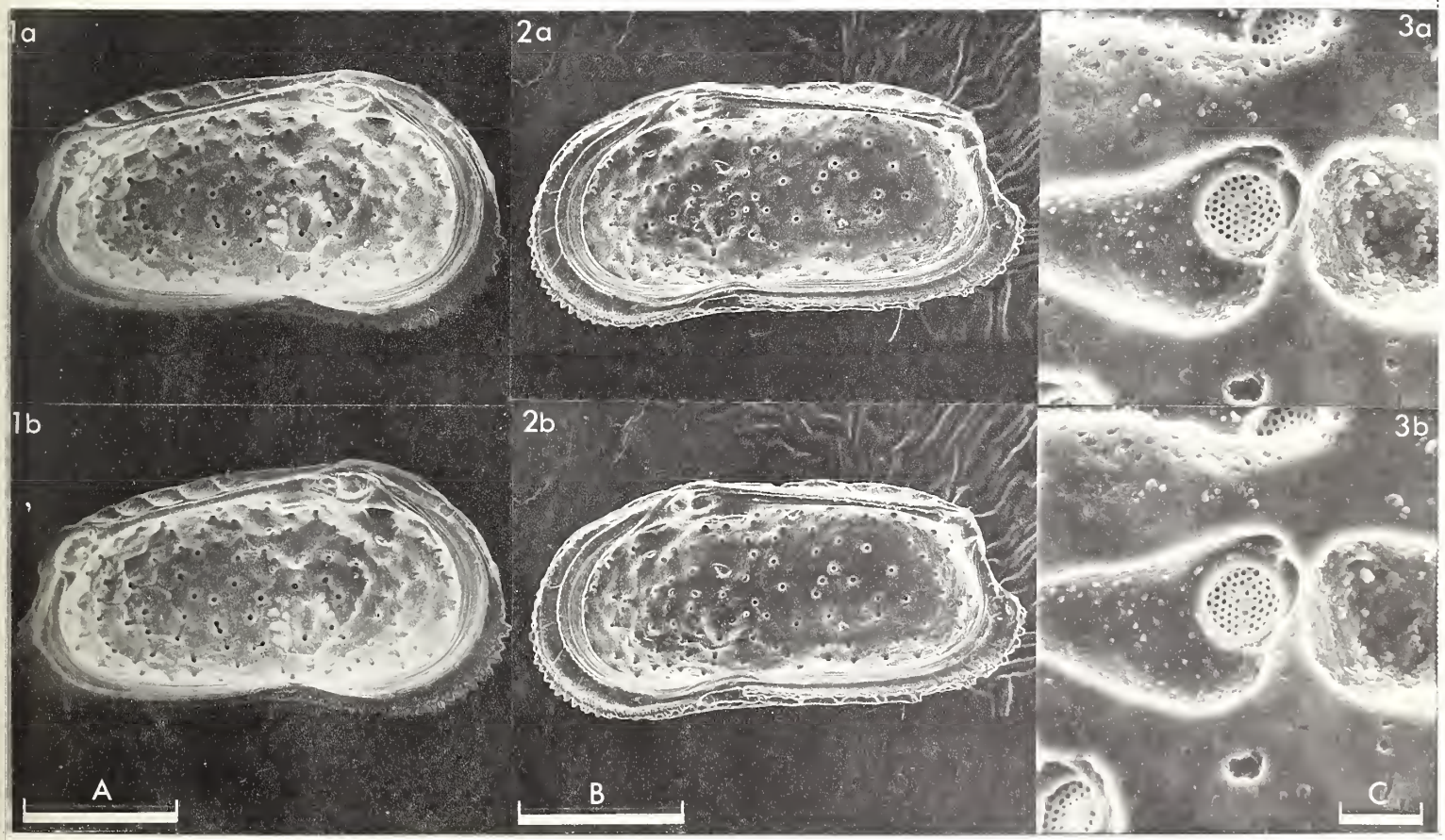
1a
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C

Type specimens: Repository not known.

Type locality: Castellarquato, Italy; approx. lat. 44°51'N, long. 9°52'E. Pliocene.

Figured specimens: Brit. Mus. (Nat. Hist.) IO 5854 (RV: Pl. 2:6:34, fig. 1; Pl. 2:6:42, fig. 6), IO 5855 (LV: Pl. 2:6:34, figs. 2, 3; Pl. 2:6:42, fig. 1; Pl. 2:6:44, fig. 1), IO 5856 (RV: Pl. 2:6:36, fig. 2), IO 5857 (RV: Pl. 2:6:36, fig. 3), IO 5858 (RV: Pl. 2:6:38, fig. 1), IO 5859 (LV: Pl. 2:6:38, fig. 3), IO 5860 (RV: Pl. 2:6:40, fig. 1), IO 5861 (LV: Pl. 2:6:40, fig. 2), IO 5862 (RV: Pl. 2:6:40, fig. 3), IO 5863 (LV: Pl. 2:6:42, fig. 2), IO 5864 (LV: Pl. 2:6:42, fig. 3), IO 5865 (RV: Pl. 2:6:42, fig. 5), IO 5866 (LV: Pl. 2:6:44, fig. 2), IO 5867 (RV: Pl. 2:6:44, fig. 3). The specimens figured in Pl. 2:6:36, fig. 1, Pl. 2:6:38, fig. 2 and Pl. 2:6:42, fig. 4, have been broken after preparation and photography.
IO 5854, IO 5856, IO 5858, IO 5863 - IO 5867 from a stream bank 1.5 km NE of Kiliçli, between Adana and Kozan, Turkey; approx. long. 35°28'E, lat. 37°08'N; the first three 3 m, the rest 2 m from the base of the section; Pliocene; yellow sandstone with molluscs, presumed littoral. IO 5955 from type locality, kindly given by G. Ruggieri. IO 5857, IO 5859 - IO 5962 dredged from Urla Bay, off W coast of Turkey; approx. long. 26°47'E, lat. 38°19'N; Recent.

Explanation of Plate 2:6:38

Fig. 1, ♂ RV, ext. lat. (IO 5858, 770 µm long); fig. 2, ♀ RV, ext. lat. (broken, 760 µm long); fig. 3, ♀ LV, ext. lat. (IO 5859, 810 µm long).

Scale A (250 µm ; ×84), figs. 1, 2; scale B (250 µm ; ×80), fig. 3.

Diagnosis: Fossae with irregular outline; distribution of fossae in a consistent pattern. Sola caperate (see Pl. 2:6:34, fig. 3; Pl. 2:6:36, fig. 3). Muri excavate (see Pl. 2:6:36, fig. 3).

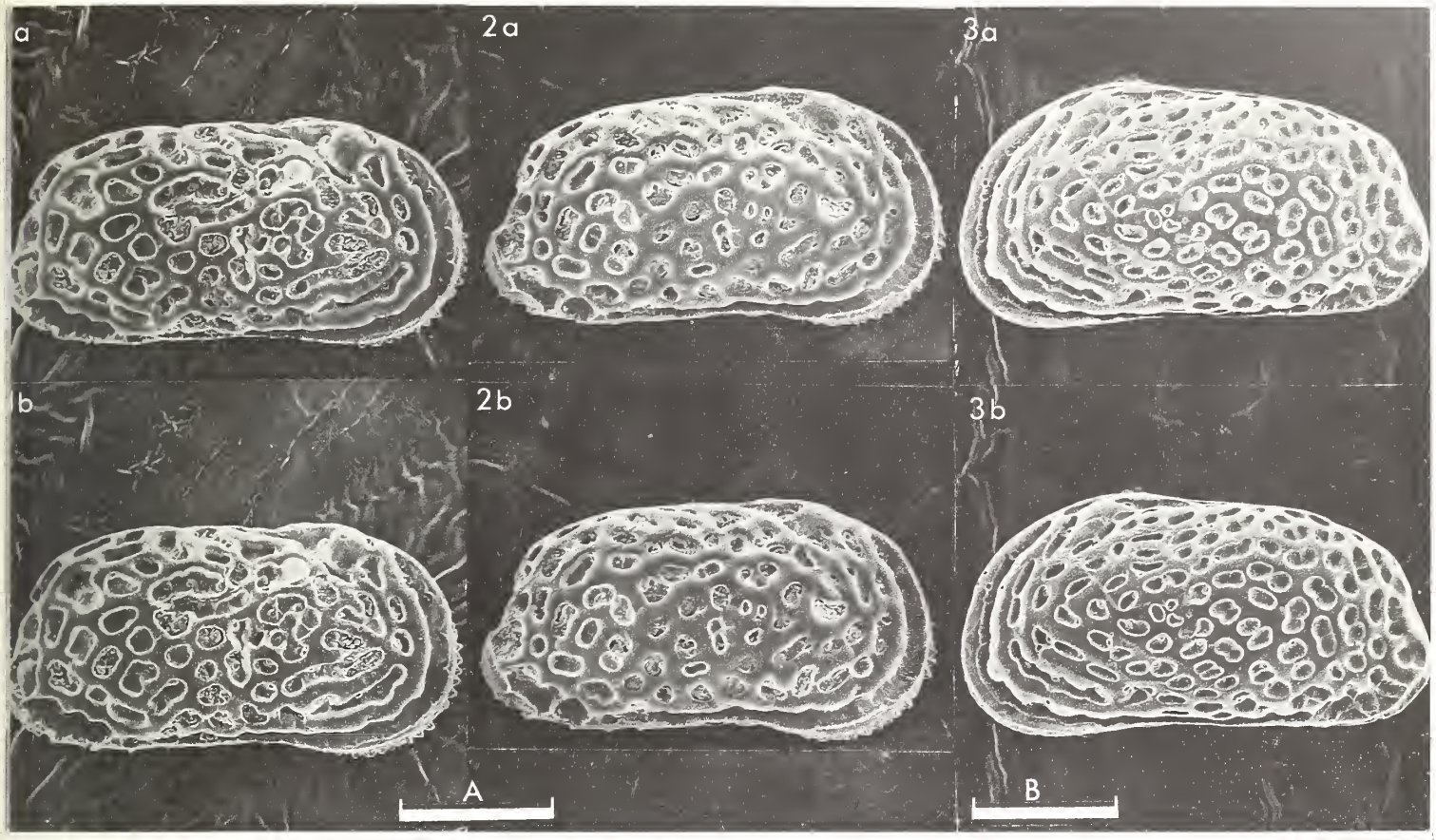
Remarks: Species is very variable in both external and internal characters (e.g. in outline and size of fossae - see Pl. 2:6:34, figs. 1, 2; Pl. 2:6:38, figs. 1-3; Pl. 2:6:40, figs. 1-3). Earlier Pliocene forms have bigger fossae than later Recent forms but intermediates occur throughout. Posterior element of left valve hinge in Pliocene forms with or without a central tubercle of variable length (see Pl. 2:6:42, figs. 1-4). No central tubercle is developed in Recent forms. Frontal scars 2 or 3; adductor scars, 4, 5 or 6 with divided or undivided median scars (see Pl. 2:6:44, figs. 1-3). Slight variations in size, but apparently unrelated to horizon. Young instars with bigger fossae, muri weakly developed. Sexual dimorphism: females more rectangular.

Distribution: Miocene-Pliocene and Quaternary in Italy (Ruggieri, op. cit.). Pliocene in Cephalonia (Uliczny, op. cit.), Aegean Islands (Sissingh, op. cit.), France (Keij, *Mém. Inst. r. Sci. nat. Belg.*, 136, p. 116, 1957), Turkey (herein) and Cyprus (author's identification). Recent from the S and W coasts of Turkey (herein).

Explanation of Plate 2:6:40

Fig. 1, ♀ RV, ext. lat. (IO 5860, 770 µm long); fig. 2, ♀ LV, ext. lat. (IO 5861, 830 µm long); fig. 3, ♀ RV, ext. lat. (IO 5862, 840 µm long).

Scale A (250 µm ; ×83), fig. 1; scale B (250 µm ; ×77), figs. 2, 3.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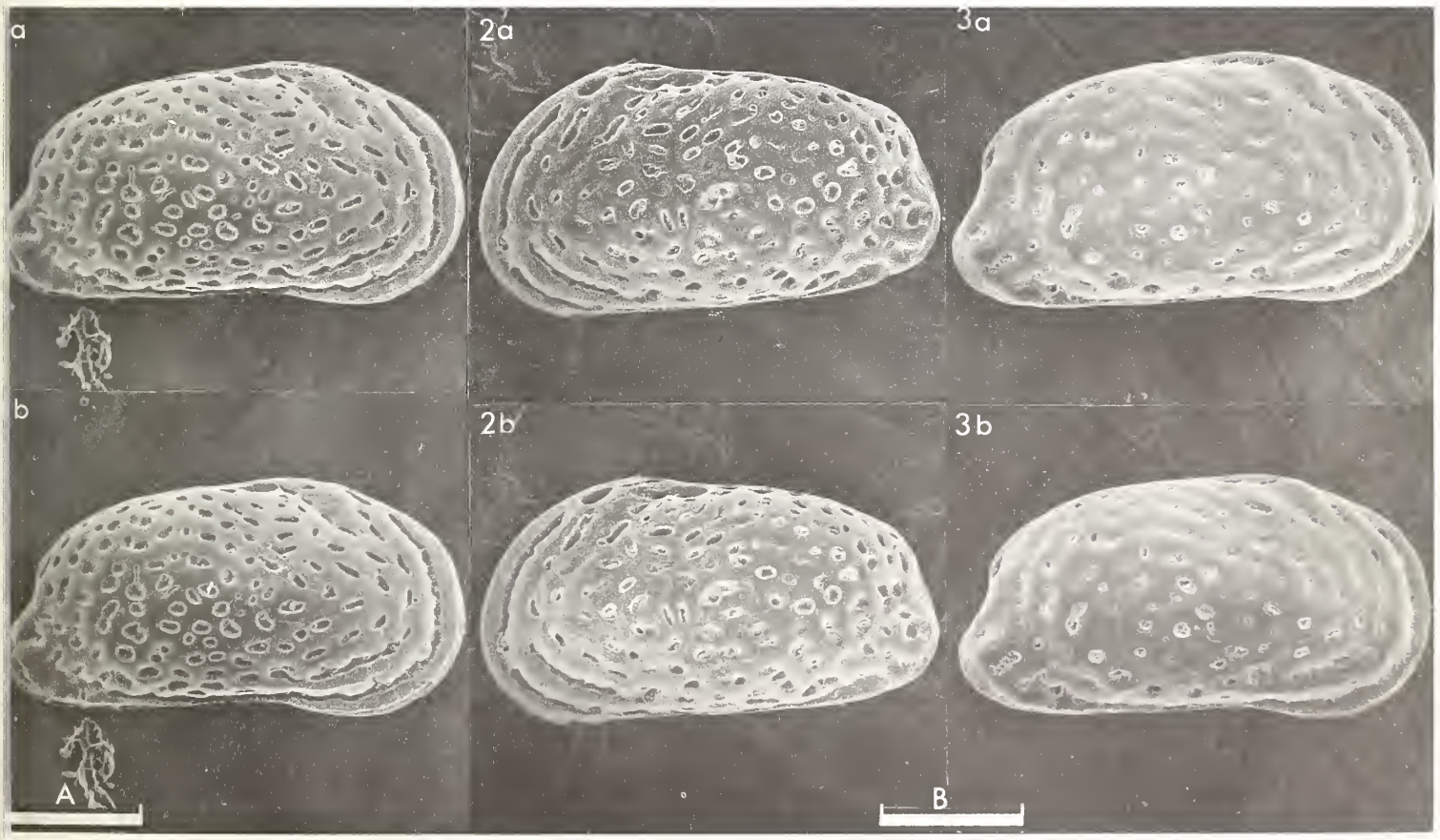
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Explanation of Plate 2:6:42

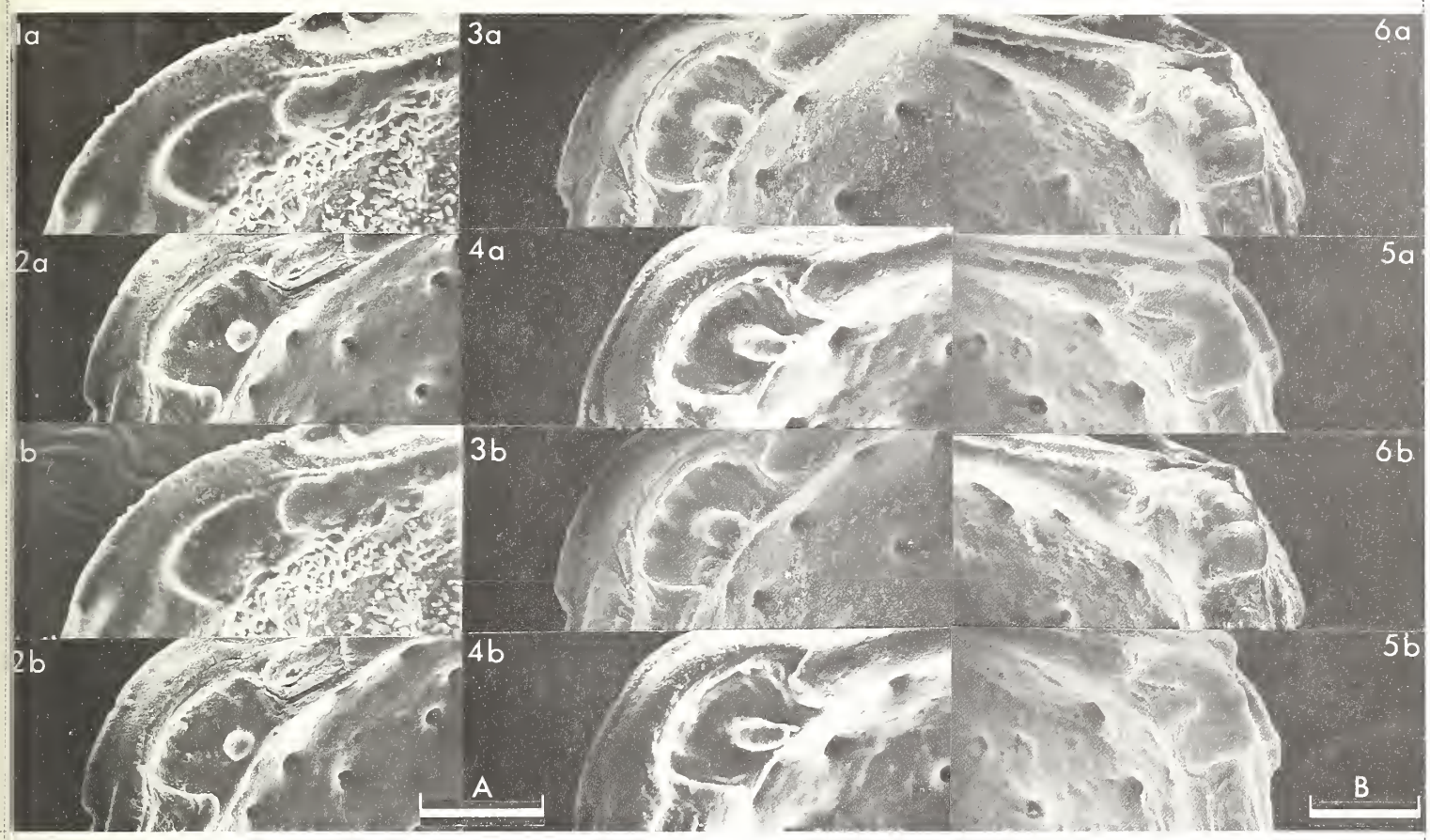
Figs. 1-4, post. elements of LV hinges: fig. 1, IO 5855; fig. 2, IO 5863; fig. 3, IO 5864; fig. 4, broken. Figs. 5, 6, post. elements of RV hinges: fig. 5, IO 5865; fig. 6, IO 5854.

Scale A (50 µm ; ×352), figs. 1-4; scale B (50 µm ; ×305), figs. 5, 6.

Explanation of Plate 2:6:44

Fig. 1, LV int. musc. sc. (IO 5855); fig. 2, LV int. musc. sc. (IO 5866); fig. 3, RV int. musc. sc. (IO 5867).

Scale A (100 µm ; ×408), figs. 1-3.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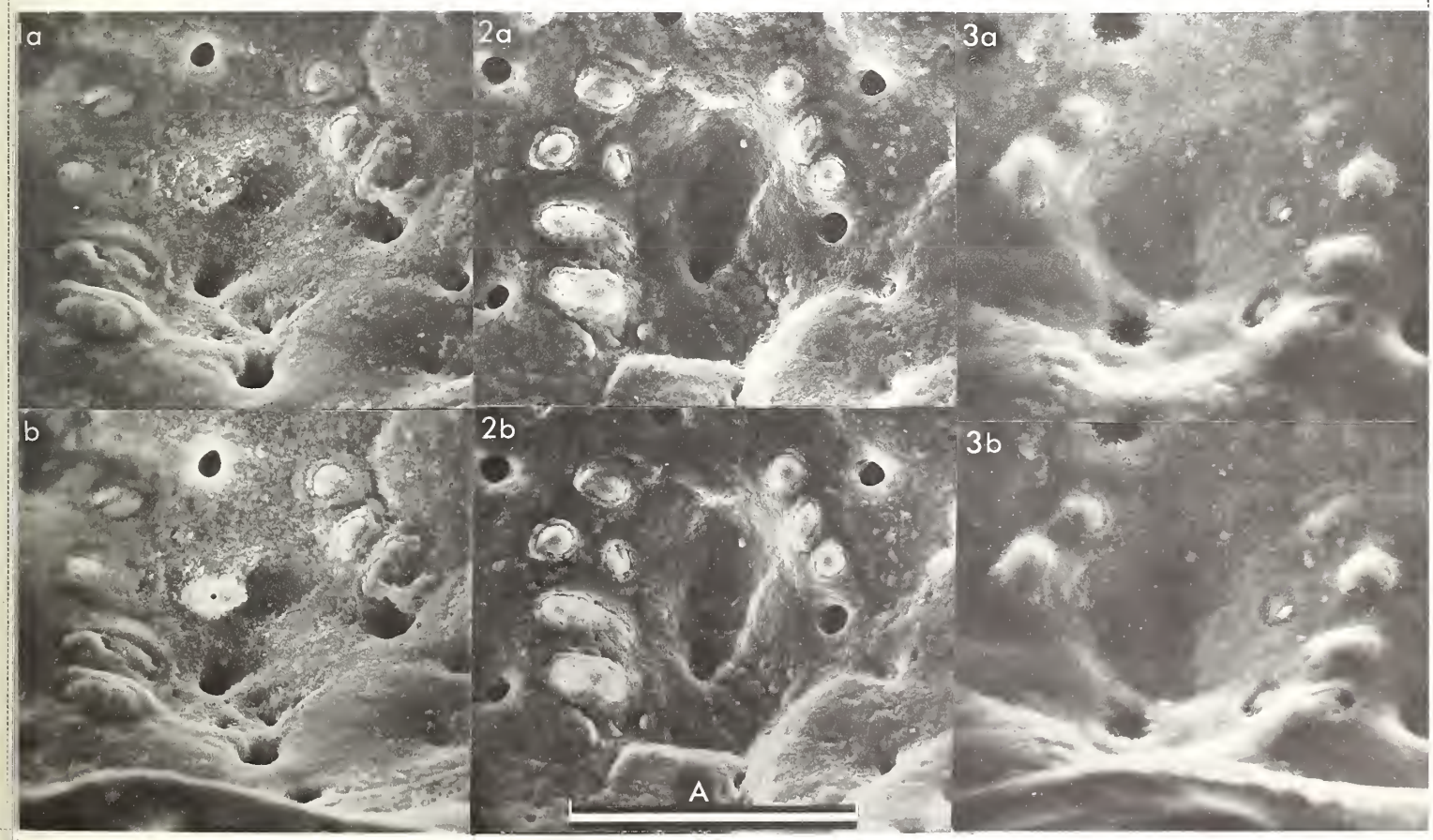
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595.337.14 (118.213) (457.1:161.014.41 + 560:161.036.36 + 560:161.035.37): 551.351 + 552.513 + 552.541

ON *UROCYTHEREIS SEMINULUM* (SEGUENZA)

by Neriman Doruk
(University of Leicester, England)

Urocythereis seminulum (Seguenza, 1880)

1880 *Cythere seminulum* G. Seguenza, *Atti Accad. naz. Lincei Memorie*, ser. 3, vol. 6, p. 124, pl. 12, figs. 4, 4a.

1963 *Urocythereis seminulum* (Seguenza); G. Ruggieri, *Boll. Soc. paleont. ital.*, vol. 2, no. 1, p. 6, pl. 1, figs. 11, 11a, text-fig. 3.

Neotype: OCR. Sl. no. 1420/1 (♀ RV); designated by Ruggieri (op. cit.). Istituto di Geologia e Paleontologia, University of Palermo, Italy.

Type locality: Benestare (approx. long. 16°10'E, lat. 38°10'N), Calabria, S Italy. Uppermost part of Middle Miocene (Tortonian). Clays with molluscs, bryozoa and foraminifera.

Diagnosis: Reticulate with irregularly rounded fossae, arranged in diagonal rows in posterodorsal region, parallel to anterior and ventral margins elsewhere.

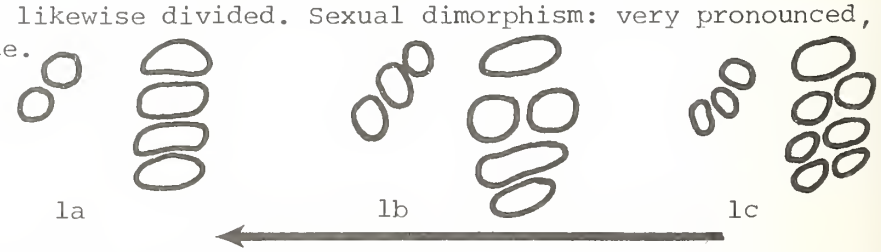
Explanation of Plate 2:7:46

Fig. 1, ♀ RV, ext. lat. (IO 5847, 780 µm long); fig. 2, ♂ LV, ext. lat. (IO 5848, 750 µm long); fig. 3, detail of sieve-plate (IO 5847).

Scale A (250 µm ; ×106), fig. 1; scale B (250 µm ; ×111), fig. 2; scale C (10 µm ; ×1590), fig. 3.

Figured specimens: Brit. Mus. (Nat. Hist.) IO 5847 (♀ RV: Pl. 2:7:46, figs. 1, 3; Pl. 2:7:48, fig. 2), IO 5848 (♂ LV: Pl. 2:7:46, fig. 2), IO 5849 (♂ LV: Pl. 2:7:48, figs. 1, 3). IO 5847 from the base of a stream section 200 m S of Sarılı, Antakya area of Turkey; approx. long. 36°13'E, lat. 36°07'N; Tortonian; bioclastic limestone, presumed shallow marine. IO 5848 from San Giovanni, Italy (kindly given by G. Ruggieri); approx. long. 14°45'E, lat. 41°35'N; Sahelian (Upper Miocene). IO 5849 from a road section (7 m from the base) 2 km S of Salbaş, Adana area of Turkey; approx. long. 35°08'E, lat. 37°07'N; Tortonian (Miocene); yellow sandstone with molluscs, presumed shallow marine.

Remarks: Size of fossae very variable. Subcentral tubercle with or without fossae. Frontal scars 2 or 3, with tendency to subdivide further variably; adductor scars are likewise divided. Sexual dimorphism: very pronounced, males more elongate.



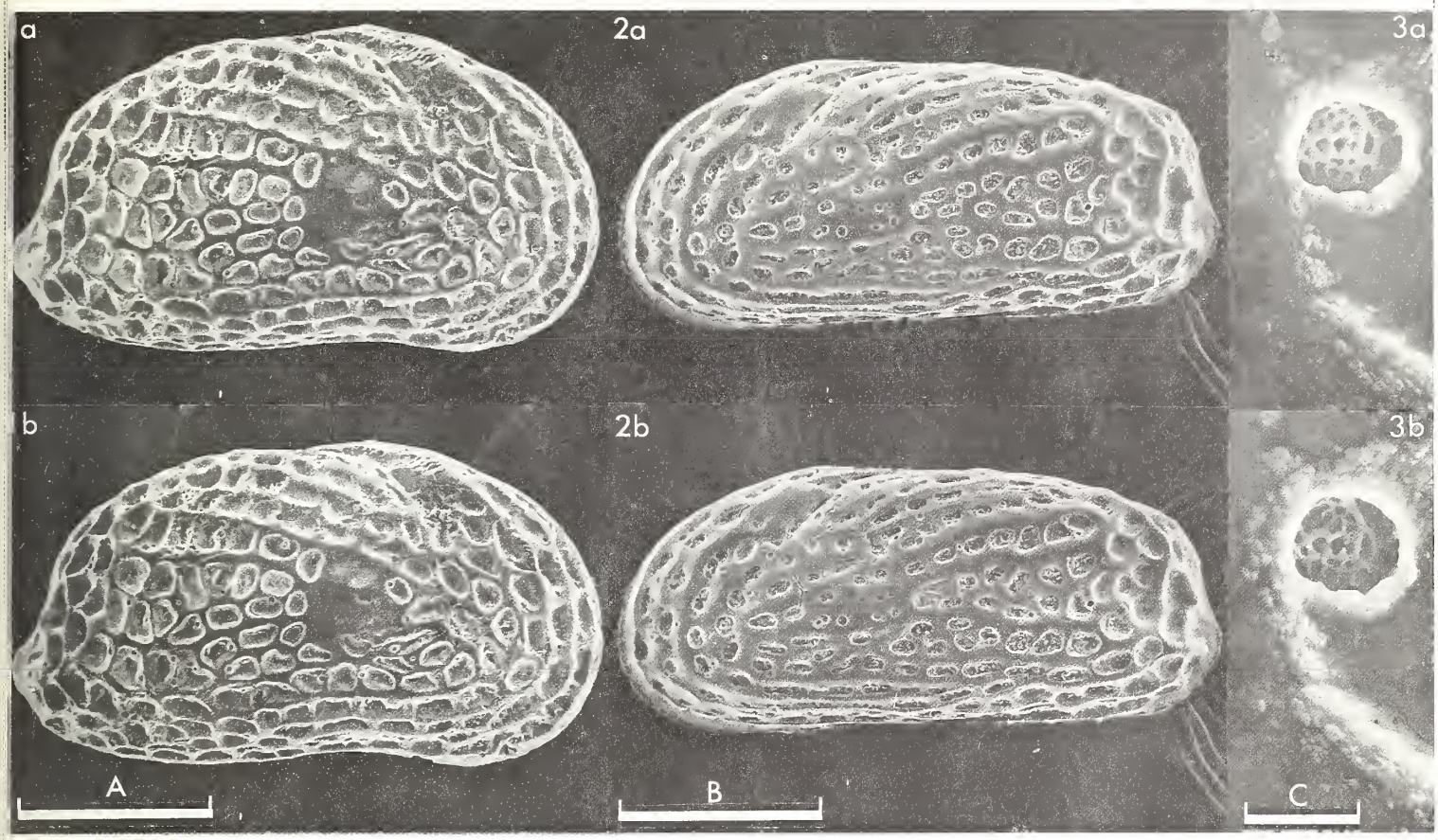
Text-figs. 1a-c. Variation in muscle-scar pattern.

Distribution: Middle to Upper Miocene; Italy and Turkey.

Explanation of Plate 2:7:48

Fig. 1, ♂ LV, int. lat. (IO 5849, 740 µm long); fig. 2, ♀ RV, int. lat. (IO 5847); fig. 3, LV, int. musc. sc. (IO 5849).

Scale A (250 µm ; ×92), fig. 1; scale B (250 µm ; ×89), fig. 2; scale C (50 µm ; ×570), fig. 3.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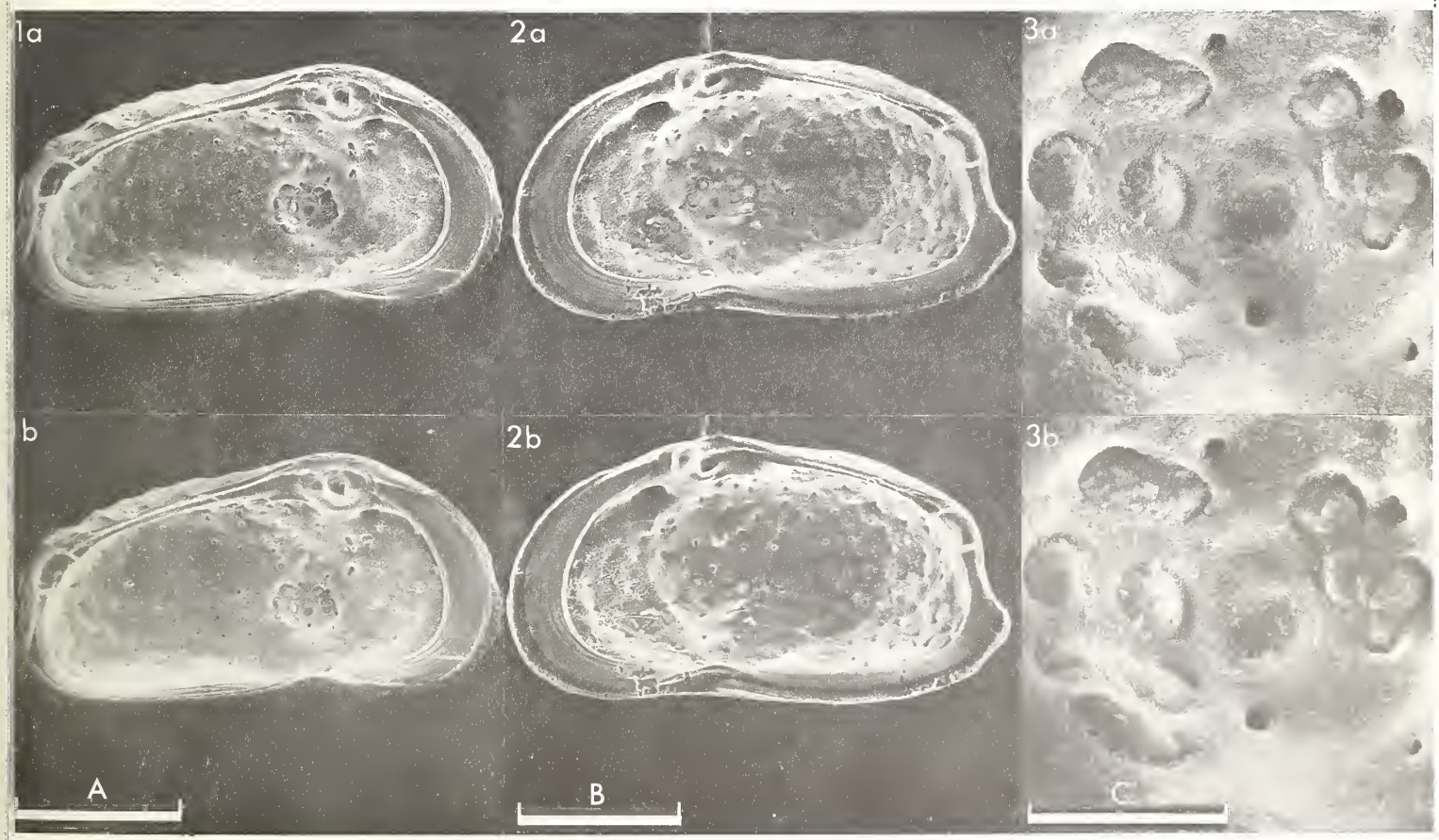
1a
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3b
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B
C

595.337.14 (118.22 + 119.2) (457.5:161.017.40 + 495.4:161.020.38): 552.523

ON *UROCYTHEREIS LABYRINTHICA* ULICZNY

by Neriman Doruk
(University of Leicester, England)

Urocythereis labyrinthica Uliczny, 1969

1969 *Urocythereis labyrinthica labyrinthica* F. Uliczny, *Hemicytheridae und Trachyleberidae aus dem Pliozän der Insel Kephallinia*, Dissertation, Univ. Munich, p. 63, pl. 4, fig. 6; pl. 15, fig. 5.

1969 *Urocythereis labyrinthica aperta* F. Uliczny, *ibid.*, p. 64, pl. 15, figs. 6, 7.

Holotype: Slg. Munich Ostr. 332, ♀ LV.

Type locality: Thiramona (profile 40), Cephalonia (Uliczny, op. cit., p. 63); Pliocene.

Figured specimens: Brit. Mus. (Nat. Hist.) IO 5851 (♀ LV: Pl. 2:8:50, fig. 1), IO 5852 (♂ LV: Pl. 2:8:50, fig. 2; Pl. 2:8:52, figs. 1, 2), IO 5853 (LV: Pl. 2:8:52, figs. 3, 4). IO 5851 from same sample as holotype of *U. labyrinthica labyrinthica*, Thiramona, Cephalonia (kindly given by Prof. H. Hagn); approx. long. 20°41'E, lat. 38°04'N; Pliocene. IO 5852 and IO 5853 from near Monumento al Marinaio, Brindisi, Italy (kindly given by Prof. G. Ruggieri); approx. long. 17°57'E, lat. 40°37'N; Calabrian, clays.

Explanation of Plate 2:8:50

Fig. 1, ♀ LV, ext. lat. (IO 5851, 990 µm long); fig. 2, ♂ LV, ext. lat. (IO 5852, 975 µm long).

Scale A (500 µm ; ×86), figs. 1, 2.

Diagnosis: Labyrinthic ornament is characteristic.

Remarks: Uliczny (op. cit.) distinguished two subspecies on the basis of size and shape differences of labyrinths. Both are recorded from the same localities. I have found the width and the extent of labyrinths are variable and the variation is continuous. I can not therefore agree that there is subspecific differentiation. Posterior socket of left valve hinge with or without central tubercle (see Pl. 2:8:52, figs. 2, 3). Frontal scars 2 or 3; adductor scars 4, 5 or 6 with undivided or divided median adductor scars. Sexual dimorphism: males more elongate (see Pl. 2:8:50, figs. 1, 2).

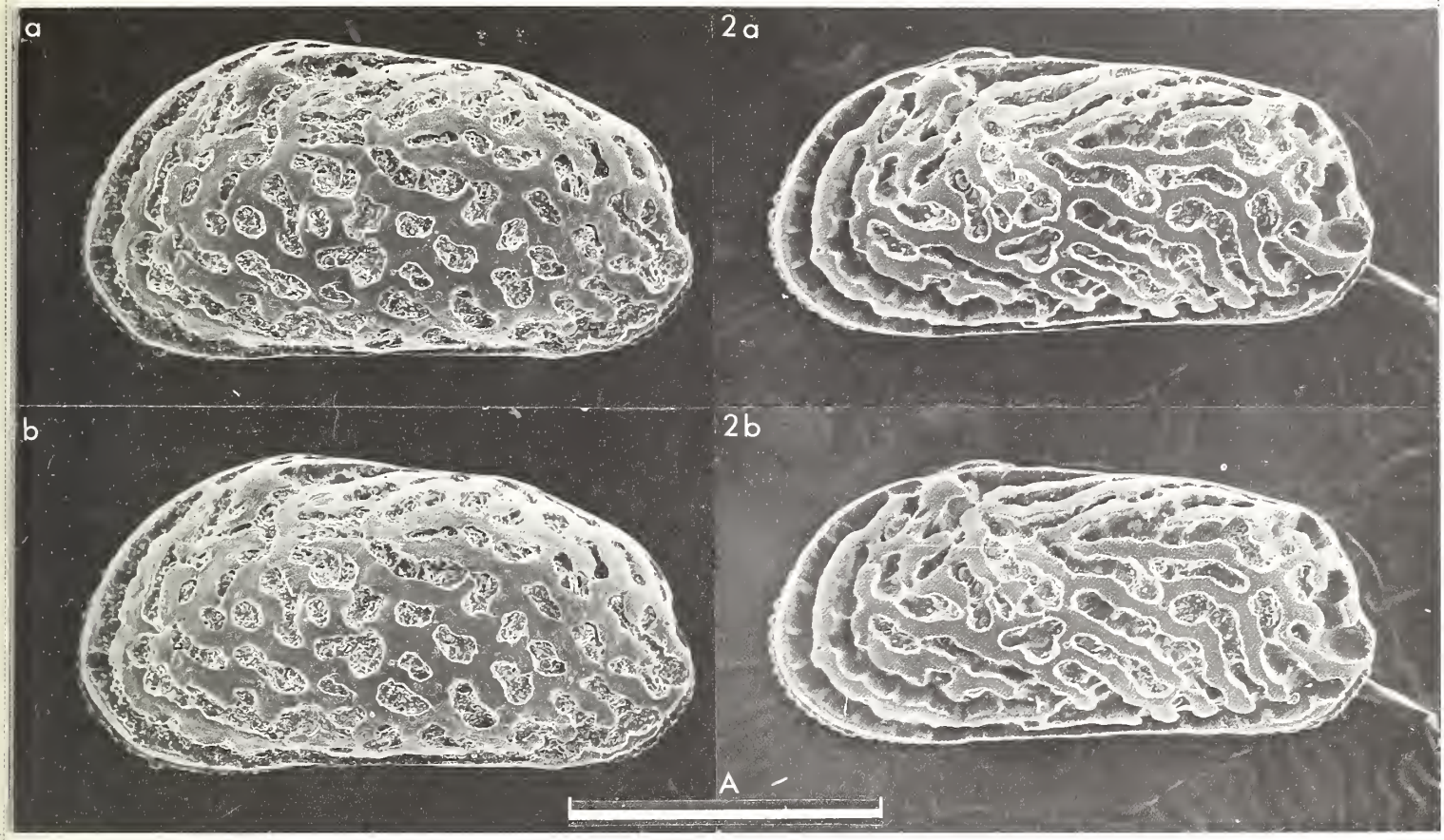
Distribution: Pliocene in Cephalonia; Pleistocene (Calabrian) in Italy.

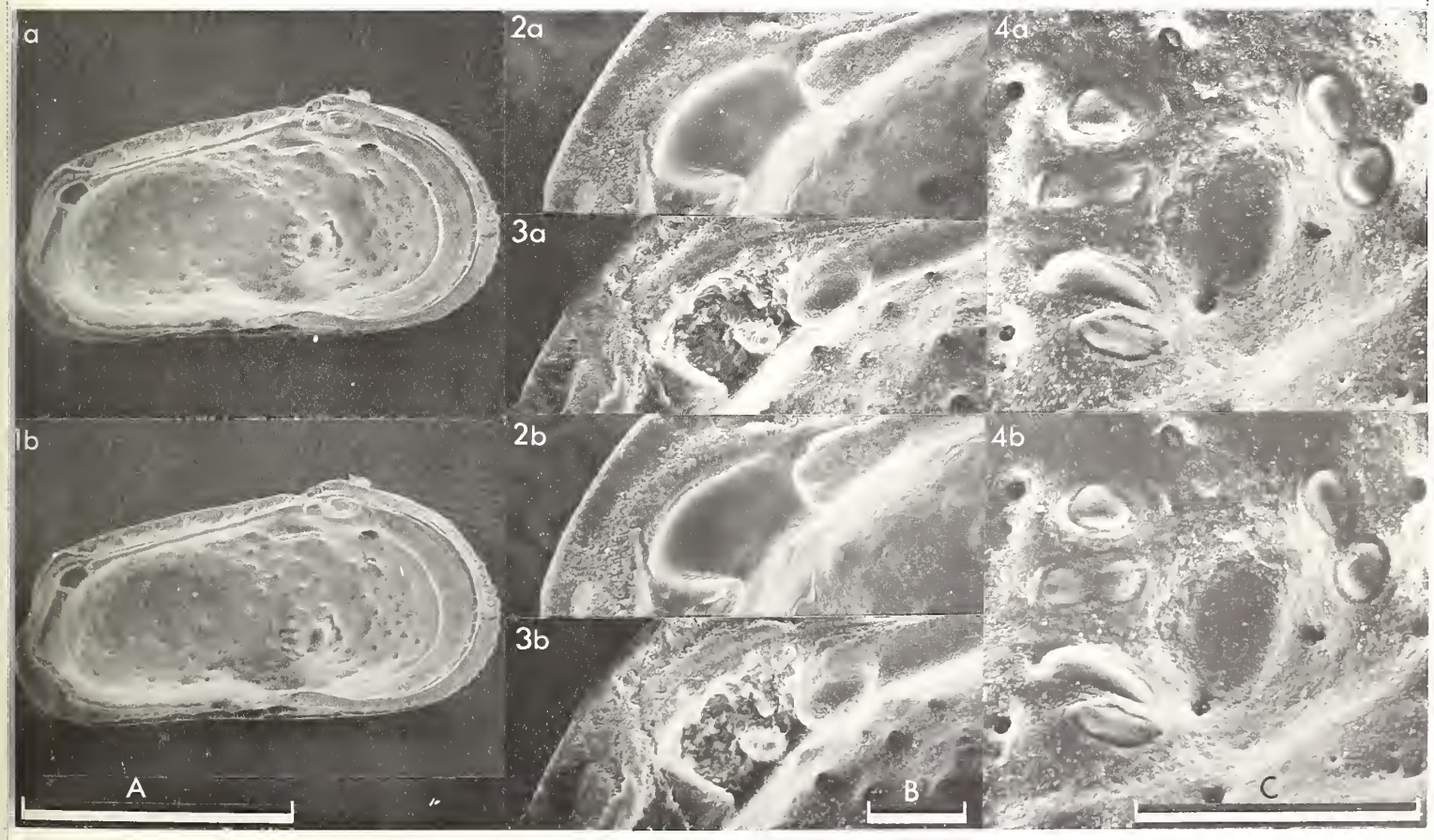
Editorial note: Sissingh (1972, *Bull. Micropaleontol. Utrecht*, no. 6, p. 128, pl. 10, fig. 7) regards *U. labyrinthica* Uliczny as a junior synonym of *Cythere lumbricularis* Terquem (1878, *Mém. Soc. géol. Fr.*, ser. 3, vol. 1, p. 105, pl. 12, fig. 6).

Explanation of Plate 2:8:52

Fig. 1, ♂ LV, int. lat. (IO 5852); figs. 2 (IO 5852), 3 (IO 5853), post. element of LV hinge; fig. 4, LV, int. musc. sc. (IO 5853).

Scale A (500 µm ; ×74), fig. 1; scale B (50 µm ; ×296), figs. 2, 3; scale C (100 µm ; ×407), fig. 4.


a
2a
b
2b
A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595.337.3 (118.22) (560:161.036.36): 551.352 + 552.523

ON *CYTHERELLA POSTDENTICULATA* OERTLI

by Neriman Doruk
(University of Leicester, England)

Cytherella postdenticulata Oertli, 1961

1961 *Cytherella postdenticulata* H. J. Oertli, *Riv. ital. Paleont. Stratigr.*, vol. 67, no. 1, p. 19, pl. 1, figs. 1-11.

1972 *Cytherella (Cytherella) postdenticulata* Oertli; W. Sissingh, *Bull. Micropaleontol. Utrecht*, no. 6, p. 68, pl. 2, fig. 1.

Holotype: No. 1339 (carapace) in the collection of the Geology Institute in Milan.

Type locality: Cessole-Bricco della Croce, N Italy; approx. long. 8°13'E, lat. 44°39'N. Miocene (Langhian).

Explanation of Plate 2:9:54

Fig. 1, LV ext. lat. (IO 5739, 760 µm long); fig. 2, LV ext., musc. sc. area (IO 5739); fig. 3, LV, obl. post. (IO 5739).

Scale A (250 µm ; ×105), fig. 1; scale B (50 µm ; ×420), fig. 2; scale C (250 µm ; ×102), fig. 3.

Figured specimens: Brit. Mus. (Nat. Hist.) IO 5739 (LV: 2:9:54, figs. 1-3; Pl. 2:9:56, figs. 2, 3), IO 5740 (LV: Pl. 2:9:56, fig. 1). Both specimens from a stream section about 2.5 km SE of the village of Sarılı, Antakya area of Turkey; approx. long. 36°12'E, lat. 36°07'N. Pliocene; grey clay with molluscs and foraminifera, presumed deep marine.

Diagnosis: Shells rather tumid. There is a fringe-like auricular projection in the posteroventer of the left valve but not the right valve, and a similar but longer expansion of the whole anterior margin in both valves (see Pl. 2:9:54, figs. 1, 3; Pl. 2:9:56, figs. 1-3). Papillate posteriorly.

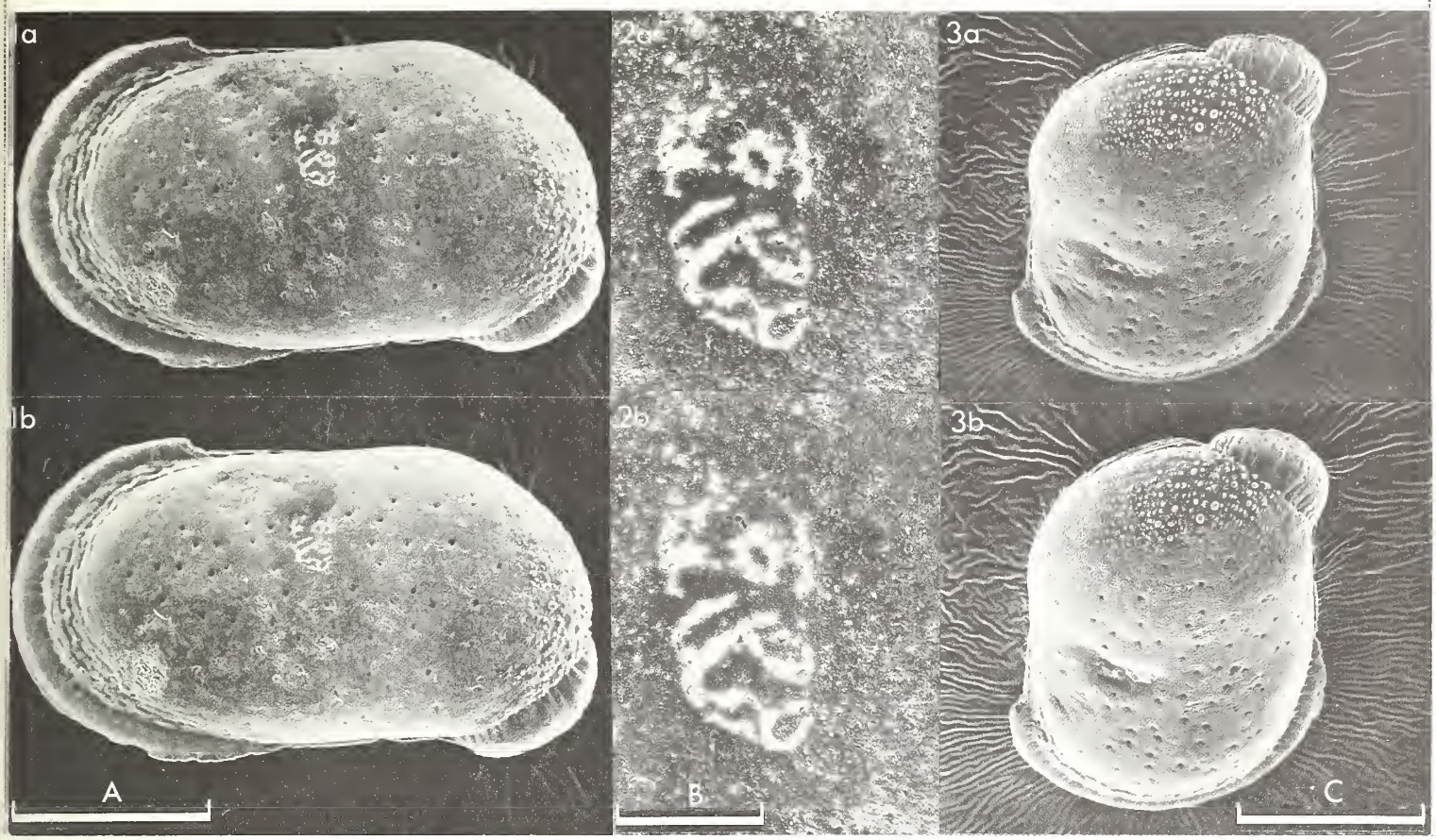
Remarks: The posterior denticulation noted by Oertli (op. cit.) is not developed; perhaps the papillate posterior was mistaken for marginal spines.

Distribution: Miocene in Italy and Greece (Crete and Gavdos). Pliocene in Turkey.

Explanation of Plate 2:9:56

Fig. 1, LV int. lat. (IO 5740, 740 µm long); fig. 2, LV, obl. vent. (IO 5739); fig. 3, LV, post. (IO 5739).

Scale A (250 µm ; ×92), fig. 1; scale B (250 µm ; ×88), fig. 2; scale C (250 µm ; ×112), fig. 3.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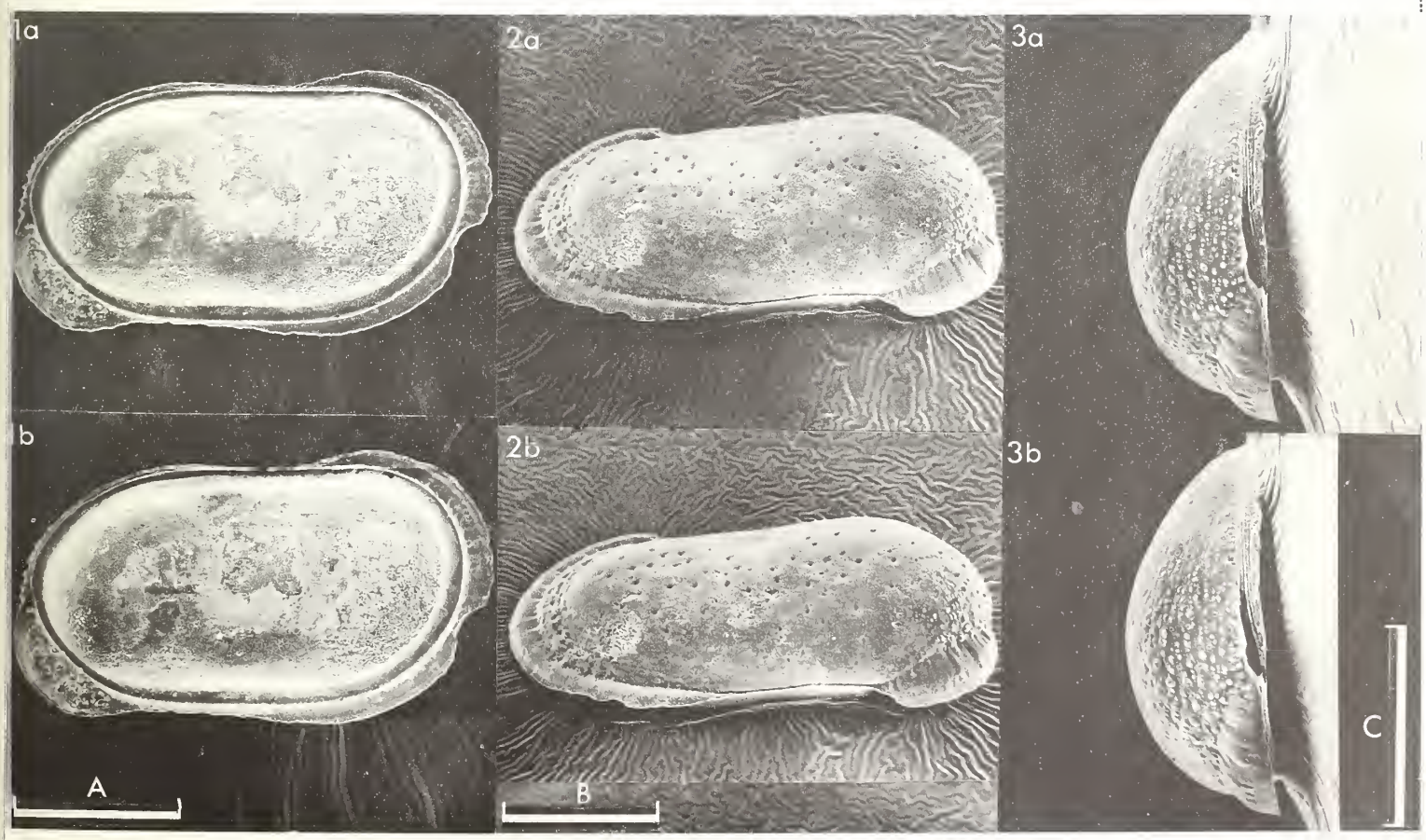
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595.337.14 (118.213) (560:161.036.36): 551.351 + 552.513 + 552.541

ON *ORIONINA TEGMINATA* DORUK sp. nov.

by Neriman Doruk
(University of Leicester, England)

Orionina tegminata sp. nov.

Holotype: Brit. Mus. (Nat. Hist.) IO 4907, ♀ RV.

Type locality: A stream cutting about 250 m S of the village of Sarılı, Turkey; approx. long. 36°13'E, lat. 36°07'N. Tortonian (Upper Miocene). Bioclastic limestone with molluscan shell fragments, presumed sublittoral.

Derivation of name: Latin, "covered", referring to the development of the tegmen.

Figured specimens: Brit. Mus. (Nat. Hist.) IO 4907 (♀ RV: Pl. 2:10:58, figs. 1, 3; Pl. 2:10:60, fig. 2), IO 4908 (♂ LV: Pl. 2:10:58, fig. 2; Pl. 2:10:60, figs. 1, 3). IO 4907 from the type locality, 1 m from the base of the section. IO 4908 from a road cutting 1 km SW of Babatorun, Turkey; approx. long. 36°15'E, lat. 36°04'N; Upper Miocene; yellow sandstone with abundant mollusca and foraminifera, presumed littoral.

Explanation of Plate 2:10:58

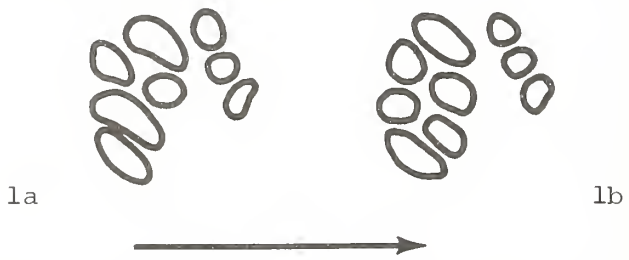
Fig. 1, ♀ RV, ext. lat. (IO 4907, 780 µm long); fig. 2, ♂ LV, ext. lat. (IO 4908, 750 µm long); fig. 3, detail of normal pores & papillation in the fossae (IO 4907).

Scale A (250 µm ; ×97), fig. 1; scale B (250 µm ; ×102), fig. 2; scale C (50 µm ; ×582), fig. 3.

Diagnosis: Tegminate, sola papillate.

Remarks: Narrow vestibule and polyfurcate marginal pore canals (characteristic of the genus), but no trace of the secondary fusion of the free part of the inner lamella could be observed. Always three frontal scars; 5-7 adductor scars with divided or undivided median and dorsal scars (see Pl. 2:10:60, fig. 3 and text-figs. 1a, b).

Text-figs. 1a, b. Variation in muscle-scar pattern.



Juveniles more triangular in shape, the costae not wholly developed, the fossae rounded instead of elongate and arranged parallel to the anterior margin. Sexual dimorphism: females a little higher and shorter than males.

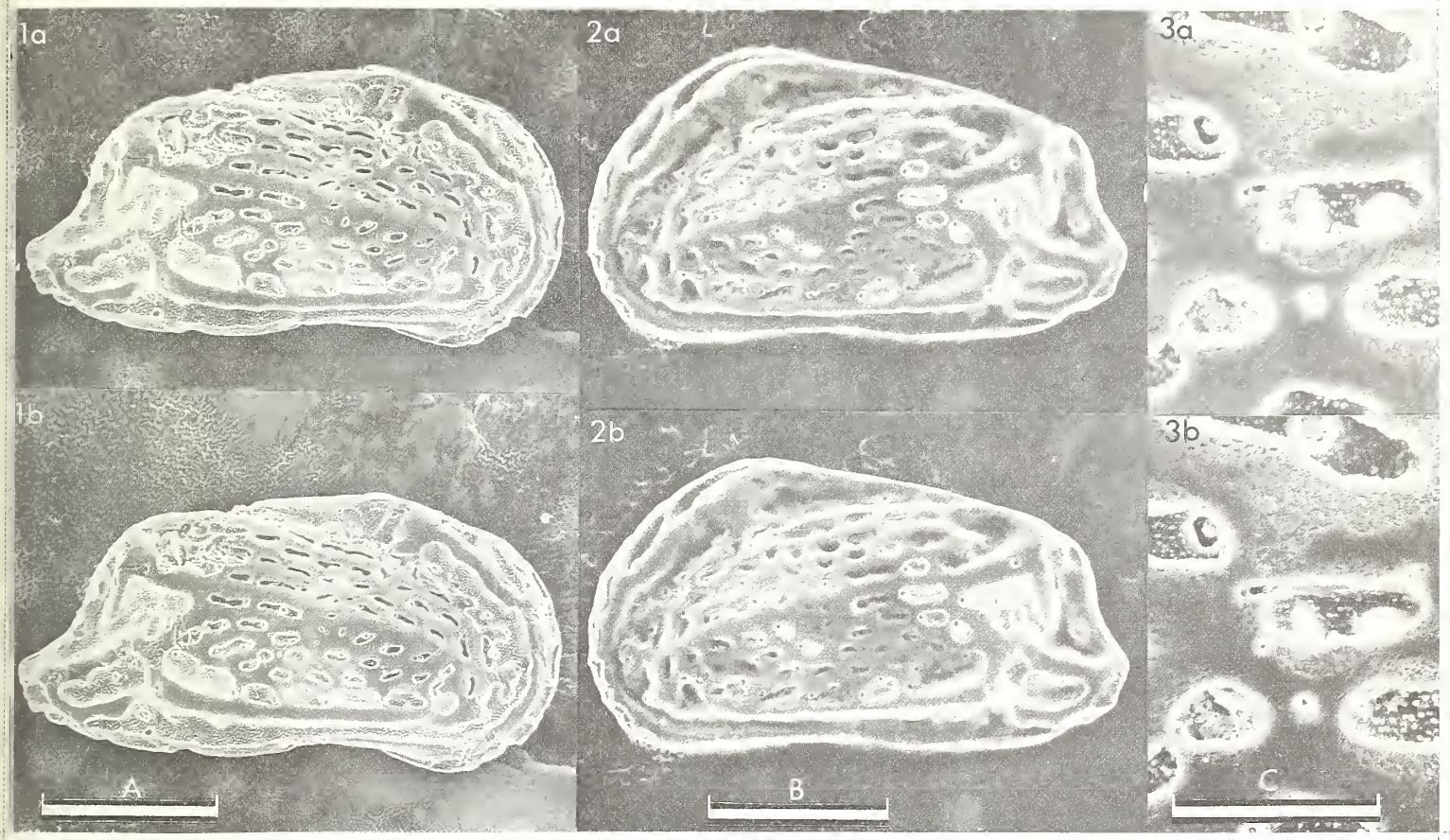
Distribution: Upper Miocene of Antakya region, Turkey.

Explanation of Plate 2:10:60

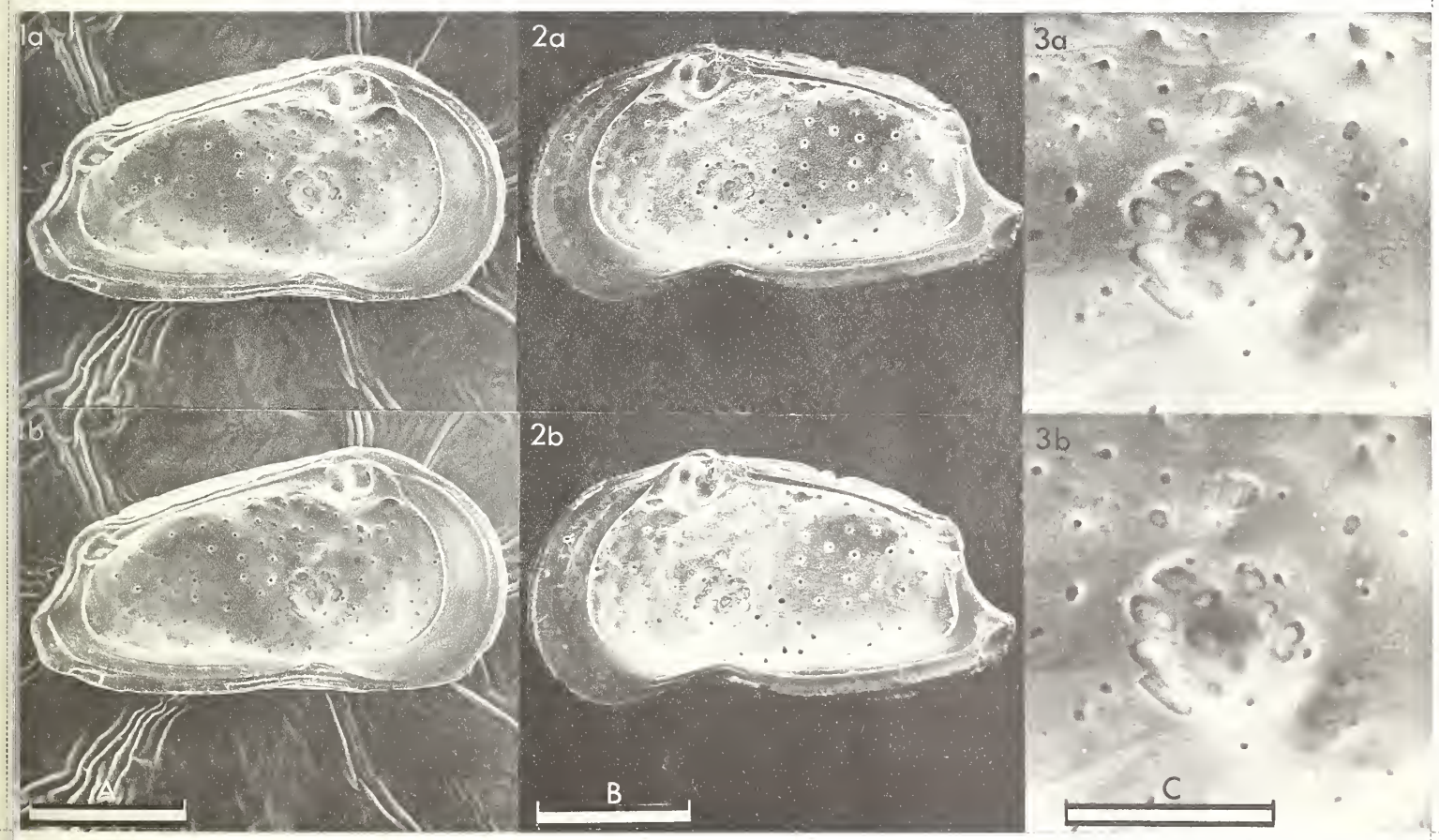
Fig. 1, ♂ LV, int. lat. (IO 4908); fig. 2, ♀ RV, int. lat. (IO 4907); fig. 3, LV, int. musc. sc. (IO 4908).

Scale A (250 µm ; ×91), fig. 1; scale B (250 µm ; ×89), fig. 2; scale C (100 µm ; ×300), fig. 3.

Stereo-Atlas of Ostracod Shells, 2:10:58 *Orionina tegminata* (2 of 4)



Stereo-Atlas of Ostracod Shells, 2:10:60 *Orionina tegminata* (4 of 4)



595.337.14 (118.213) (560:161.036.36): 551.351 + 552.513

ON *ORIONINA BIRETICULATA* DORUK sp. nov.

by Neriman Doruk
(University of Leicester, England)

Orionina bireticulata sp. nov.

Holotype: Brit. Mus. (Nat. Hist.) IO 5775, ♂ RV.

Type locality: A road section 1 km SW of Babatorun, Turkey; approx. long. 36°15'E, lat. 36°04'N. Uppermost Miocene. Yellow sandstone with molluscan shell fragments and foraminifera; presumed littoral.

Derivation of name: Latin "twice reticulate", referring to the second order reticulation (see Pl. 2:11:62, fig. 3).

Explanation of Plate 2:11:62

Fig. 1, ♂ RV, ext. lat. (IO 5773, 760 µm long); fig. 2, ♀ RV, ext. lat. (IO 5774, 735 µm long); fig. 3, development of second order reticulation in caperate fossae (IO 5774).

Scale A (250 µm ; ×107), fig. 1; scale B (250 µm ; ×106), fig. 2; scale C (10 µm ; ×1060), fig. 3.

Figured specimens: Brit. Mus. (Nat. Hist.) IO 5773 (♂ RV: Pl. 2:11:62, fig. 1), IO 5774 (♀ RV: Pl. 2:11:62, figs. 2, 3; Pl. 2:11:64, fig. 3), IO 5775 (♂ RV: Pl. 2:11:64, fig.s 1, 2).
All specimens are from the base of the section at the type locality.

Diagnosis: Carinate with 8-10 longitudinal ridges; reticulate between carinae. Sola caperate; in some fossae caperation develops into a second order reticulation (see Pl. 2:11:62, fig. 3). Caudal process well developed.

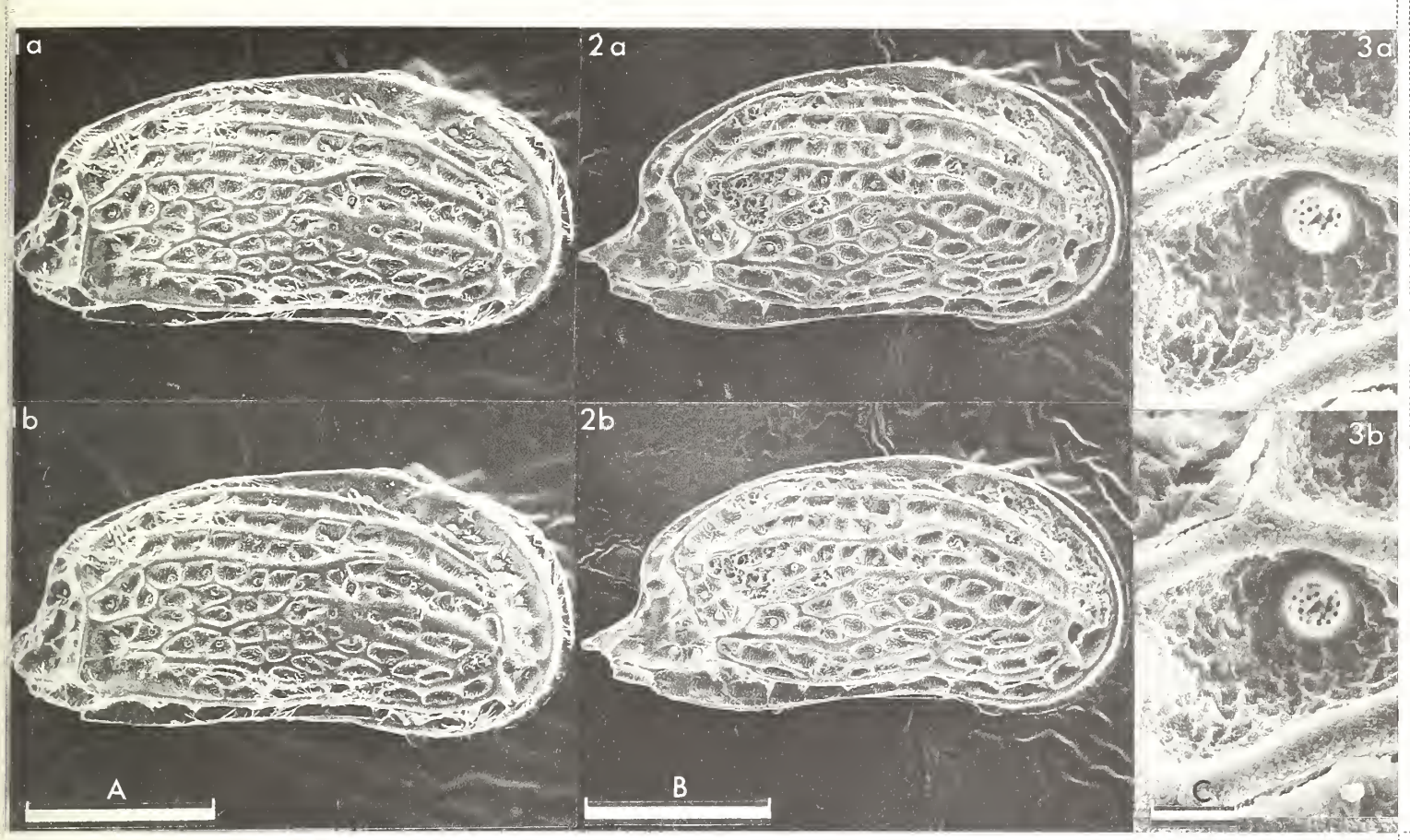
Remarks: Median adductor scars undivided (see Pl. 2:11:64, fig. 2) or both divided; two frontal scars. Sexual dimorphism: males more elongate (cf. ♂: Pl. 2:11:62, fig. 1, with ♀: Pl. 2:11:62, fig. 2).

Distribution: Known so far only from the type locality, Turkey.

Explanation of Plate 2:11:64

Fig. 1, ♂ RV, int. lat. (IO 5775, 740 µm long); fig. 2, RV, int. musc. sc. (IO 5775); fig. 3, detail of a sieve-plate (IO 5774).

Scale A (250 µm ; ×95), fig. 1; scale B (50 µm ; ×475), fig. 2; scale C (10 µm ; ×2802), fig. 3.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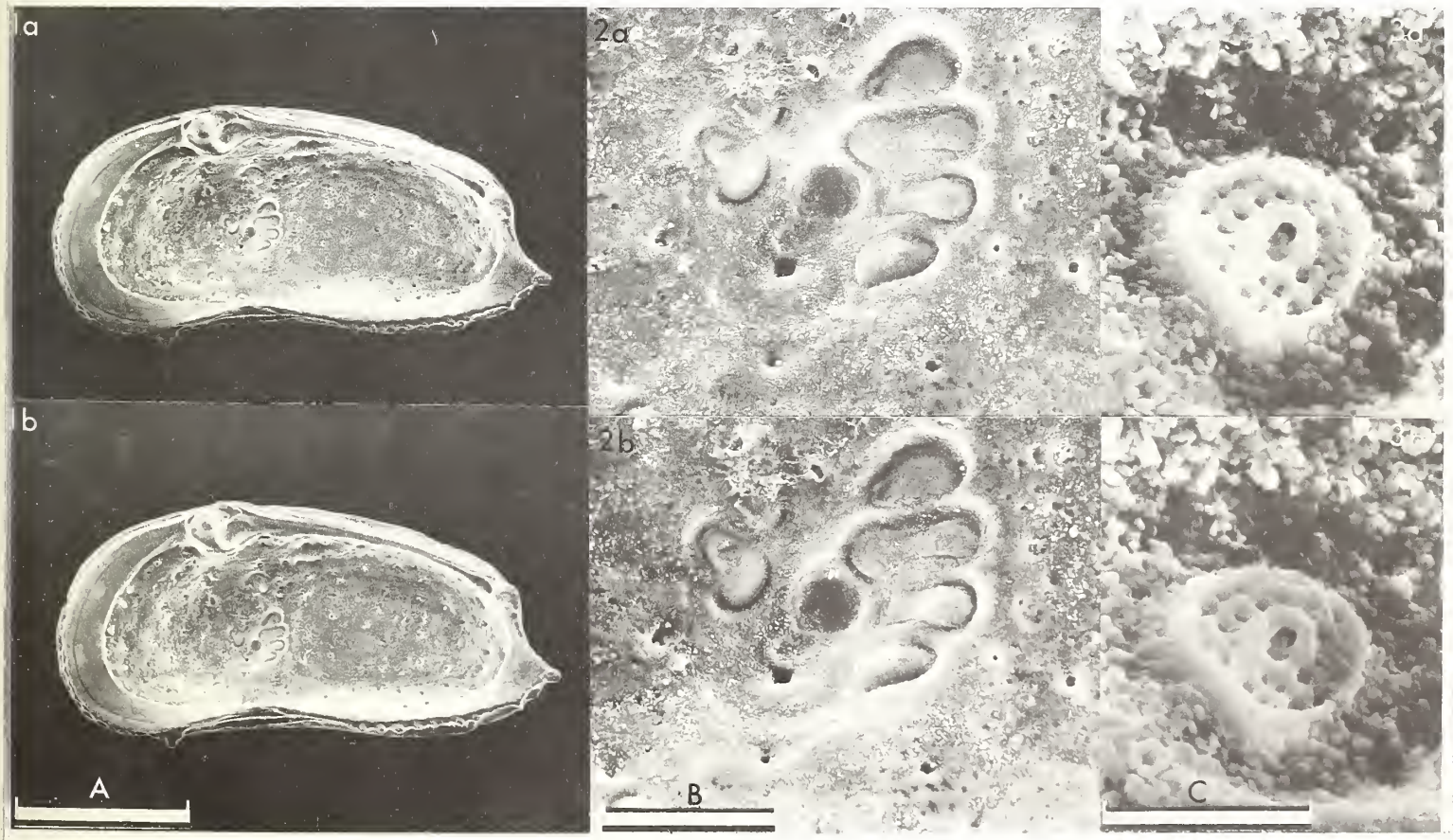
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595.337.11 (118.213 + 119.9) (560:161.036.36 + 262.4:161.026.38): 551.351 + 552.513

ON *TRIEBELINA RARIPILA* (G. W. MÜLLER)

by Neriman Doruk
(University of Leicester, England)

Triebelina raripila (G. W. Müller, 1894)

1894 *Bairdia raripila* G. W. Müller, *Zool. Jber. Neapel*, no. 21, p. 274, pl. 13, fig. 37; pl. 15, figs. 5-7, 28.

1912 *Nesidea raripila* (Müller); G. W. Müller, Ostracoda, in *Das Tierreich*, Auftrage Kgl. Preuss. Akad. Wiss. (Berlin), vol. 31, p. 243.

1968 *Bairdia raripila* (Müller); M. Masoli, *Mem. Mus. Tridentino Sci. Nat.*, vol. 17, fasc. 1, p. 10, pl. 1, fig. 5; pl. 4, figs. 44-46.

Holotype: In the collections of the Crustacea Division, Zoological Museum, Berlin, Germany; no. 9206 (under *Nesidea*). See Diebel, *Geologie*, vol. 11, no. 2, p. 244, 1962.

Type locality: Bay of Naples (in shallow waters), Italy.

Explanation of Plate 2:12:66

Fig. 1, ♂ RV, ext. lat. (broken, 640 µm long); fig. 2, ♀ LV, ext. lat. (IO 5822, 685 µm long).

Scale A (250 µm ; ×130), fig. 1; scale B (250 µm ; ×124), fig. 2.

Figured specimens: Brit. Mus. (Nat. Hist.) IO 5822 (♀ LV: Pl. 2:12:66, fig. 2; Pl. 2:12:68, figs. 1, 3). The specimen (♂ RV) figured in Pl. 2:12:66, fig. 1, and Pl. 2:12:68, fig. 2 was broken after preparation and photography. IO 5822 dredged from Urla Bay off the W coast of Turkey; approx. long. 26°47'E, lat. 38°19'N; Recent. Broken specimen from a road section about 2 km S of Com, Antakya area of Turkey; approx. long. 36°15'E, lat. 36°02'N; Upper Miocene; yellow sandstone with molluscs and foraminifera, presumed shallow marine.

Diagnosis: Elongate, punctate; the shell is inflated longitudinally below mid-line in both anterior and posterior halves.

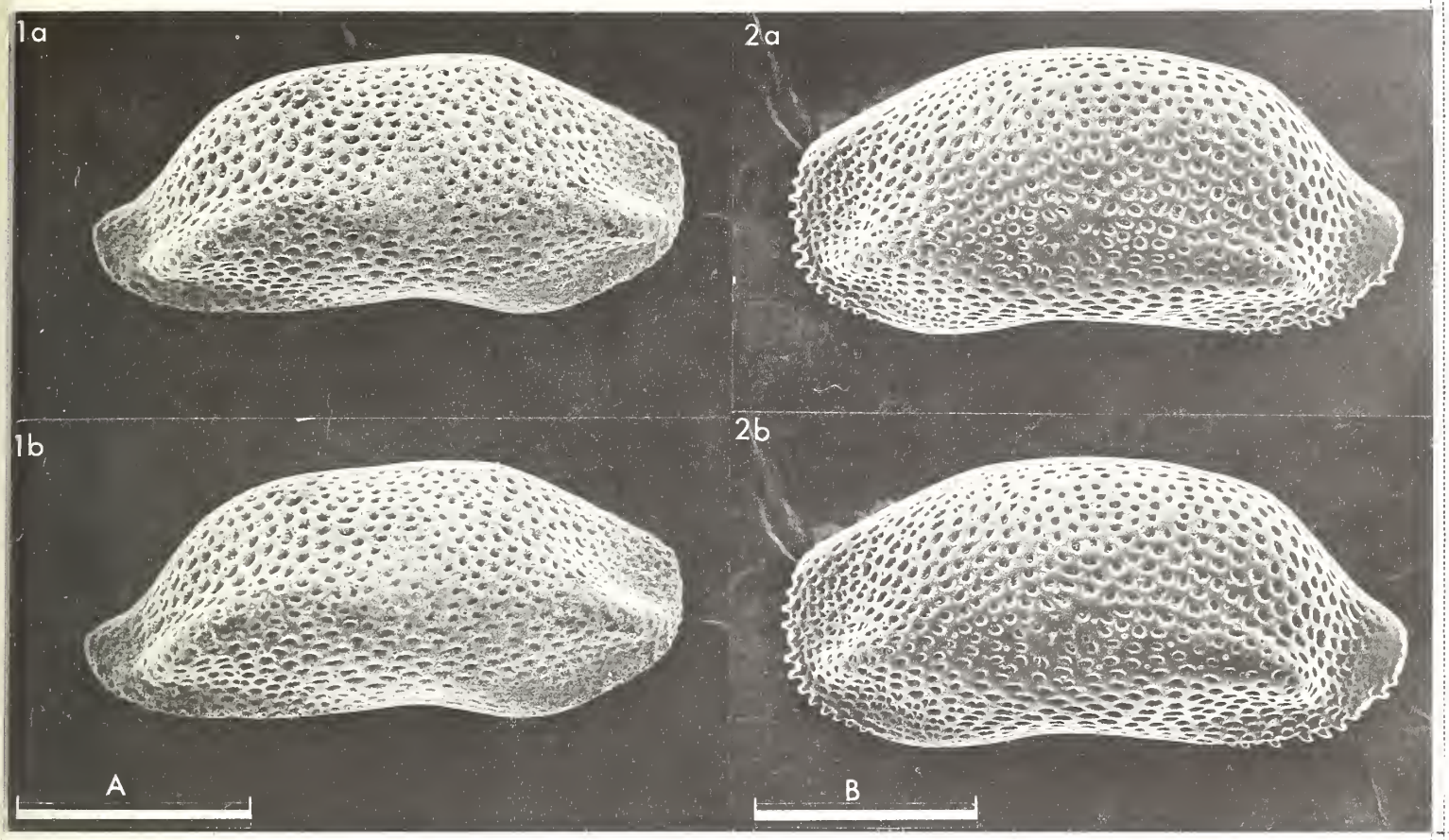
Remarks: Sexual dimorphism: distinct, males more elongate (cf. ♂: Pl. 2:12:66, fig. 1 with ♀: Pl. 2:12:66, fig. 2).

Distribution: Recent in Mediterranean. Upper Miocene in Turkey.

Explanation of Plate 2:12:68

Fig. 1, ♀ LV, int. lat. (IO 5822); fig. 2, ♂ RV, int. lat. (broken); fig. 3, LV, int. musc. sc. (IO 5822).

Scale A (250 µm ; ×99), fig. 1; scale B (250 µm ; ×108), fig. 2; scale C (100 µm ; ×495), fig. 3.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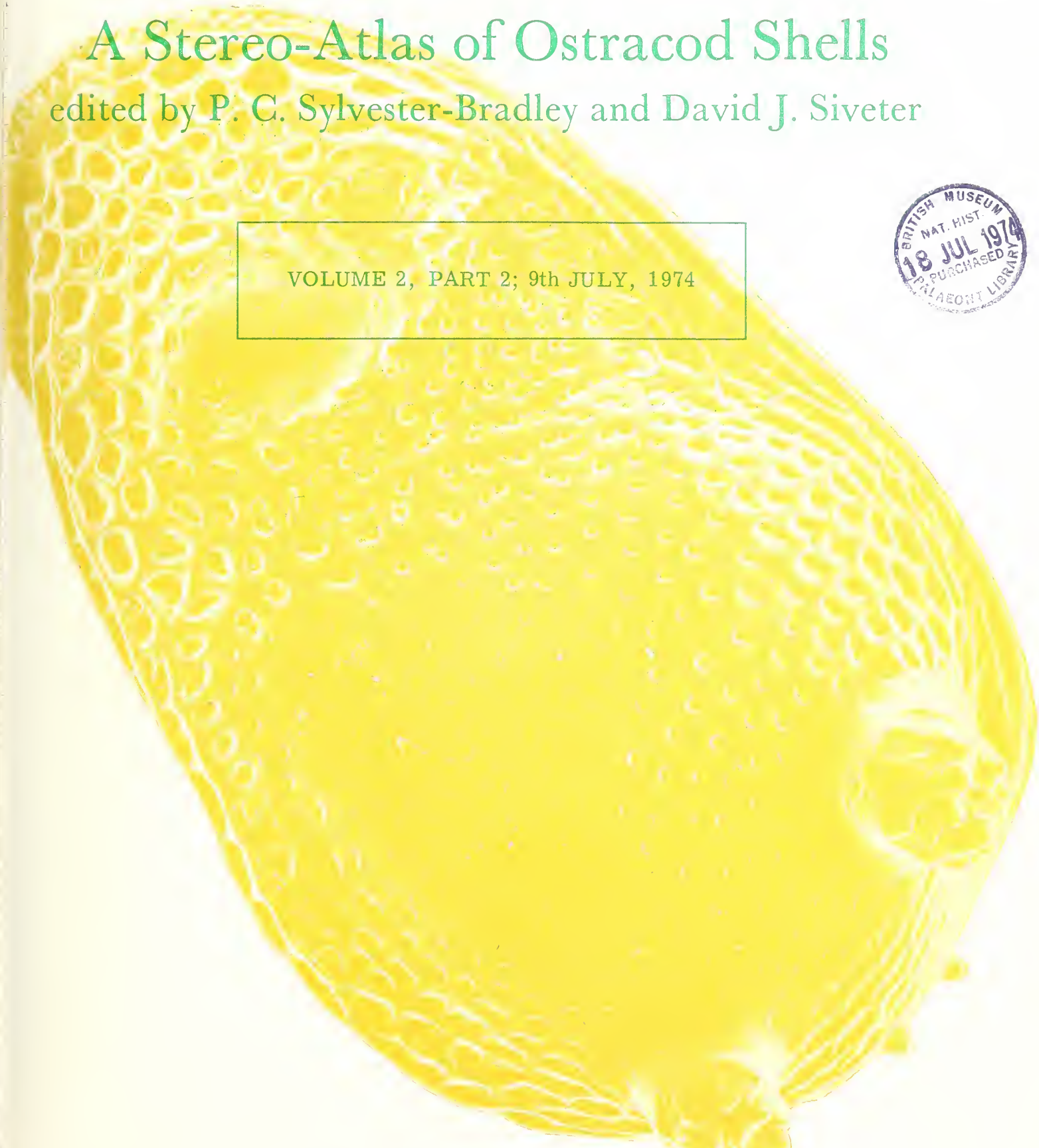

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PUBLICATION DATE

Corrected issue date for Volume 2, Part 2 is 17th July, 1974.

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DEPARTMENT OF GEOLOGY, UNIVERSITY OF LEICESTER

595.337.14 (119.9) (261.268:162.003.50 + 423.3:162.003.50 + 261.26:162.002.55): 551.351

ON *SEMICYTHERURA NIGRESCENS* (BAIRD)

by John E. Whittaker
(*British Museum (Natural History) London*)

Genus *SEMICYTHERURA* Wagner, 1957

Type-species (by original designation): *Cythere nigrescens* Baird, 1838

Diagnosis: Shell smooth to highly ornate; caudal process pronounced. Internally, calcified inner lamella very broad both anteriorly and posteriorly; in posterior part the line of concrescence (= inner margin) sweeps strongly forwards, in many species to reach as far as the middle of the valve; consequently marginal pore canals very long though many are false particularly in the posterior region. Median hinge element of left valve usually smooth and short, but produced at both ends and generally crenulate. Males wider than females, being inflated posteriorly to accommodate the massive copulatory appendage.

Remarks: For a comparison with *Cytherura* and *Hemicytherura* as typified by their respective type-species, *C. gibba* (O. F. Müller) and *H. cellulosa* (Norman), see *Stereo-Atlas of Ostracod Shells*, vol. 1, pt. 4, pp. 273-280 and vol. 1, pt. 1, pp. 77-84, 1973.

Explanation of Plate 2:13:70

Fig. 1, ♀ car., ext. lt. lat. (1974.105, 400 µm long); fig. 2, ♂ car., ext. lt. lat. (1974.106, 420 µm long); fig. 3, juv-1 car., ext. lt. lat. (1974.107, 350 µm long).

Scale A (100 µm ; ×150), figs. 1-3.

Semicytherura nigrescens (Baird, 1838)

1838 *Cythere nigrescens* sp. nov. W. Baird, *Mag. Zool. Bot.*, vol. 2, p. 143, pl. V, fig. 27.
1866 *Cytherura nigrescens* (Baird); G. O. Sars, *Forh. VidenskSelsk. Krist.*, vol. for 1865, p. 71.
1957 *Semicytherura nigrescens* (Baird); C. W. Wagner, *Sur les Ostracodes du Quaternaire récent des Pays-Bas et leur utilisation dans l'étude géologique des dépôts holocènes*, Mouton & Co., The Hague, p. 81, pl. XXXVII.

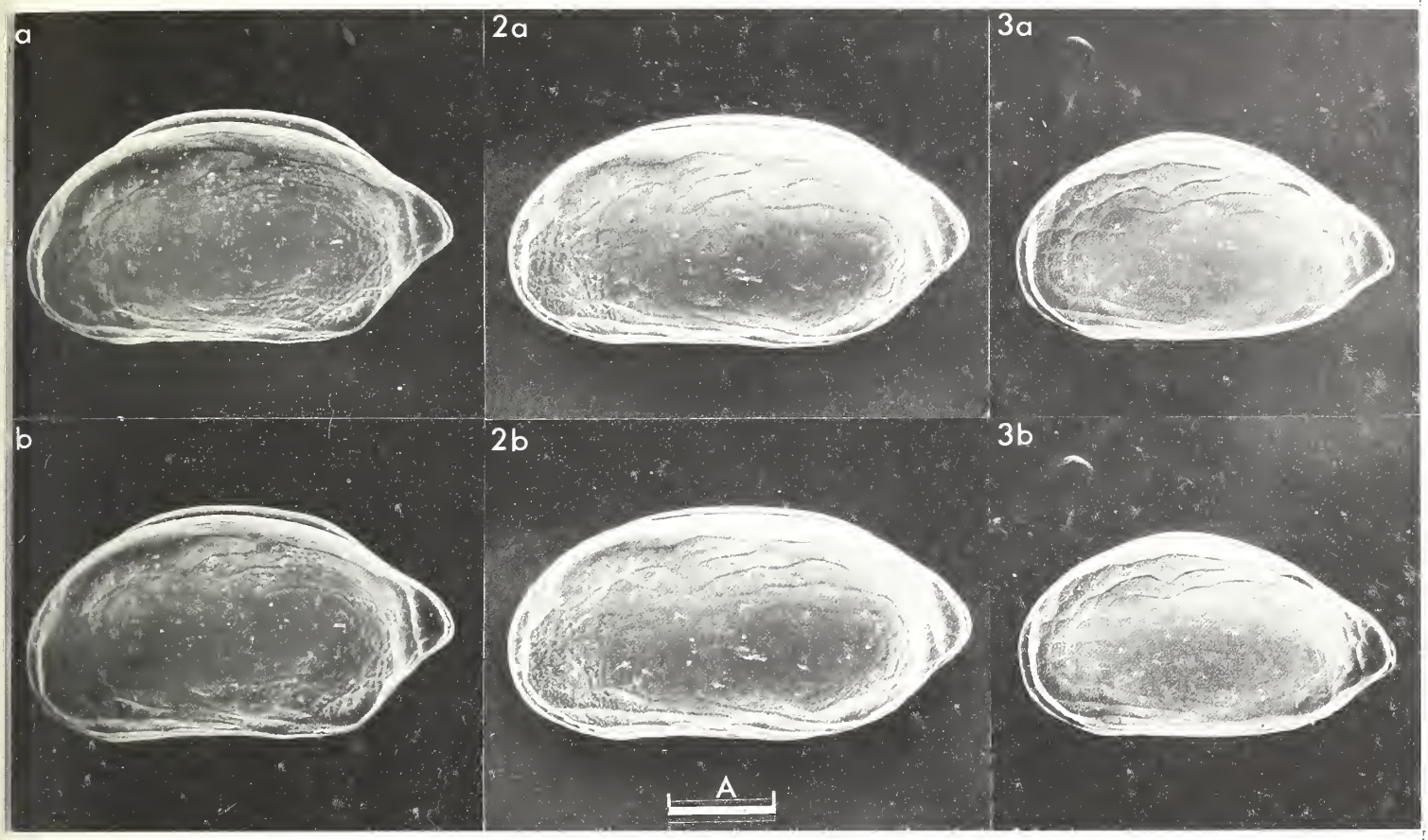
Type specimens: The types from Berwick Bay, Northumberland, NE England are not with the remaining part of the Baird Collection in the Brit. Mus. (Nat. Hist.) and must be presumed lost.

Diagnosis: Adult carapace small (*c.* 0.40-0.45 mm long); venter straight, dorsal margin gently arched. Ornament very subdued, made up for the most part of fine ridges and puncta arranged in rows; towards the outer surfaces, however, it becomes slightly stronger with a reticulum developed. Internally, posterior indentation of line of concrescence only moderate. Males more elongate and widest posteriorly.

Explanation of Plate 2:13:72

Fig. 1, ♀ car., ext. dors. (1974.108, 400 µm long); fig. 2, ♂ car., ext. dors. (1974.109, 420 µm long); fig. 3, ♂ car., ext. vent. (1974.110, 400 mm long).

Scale A (100 µm ; ×150), figs. 1-3.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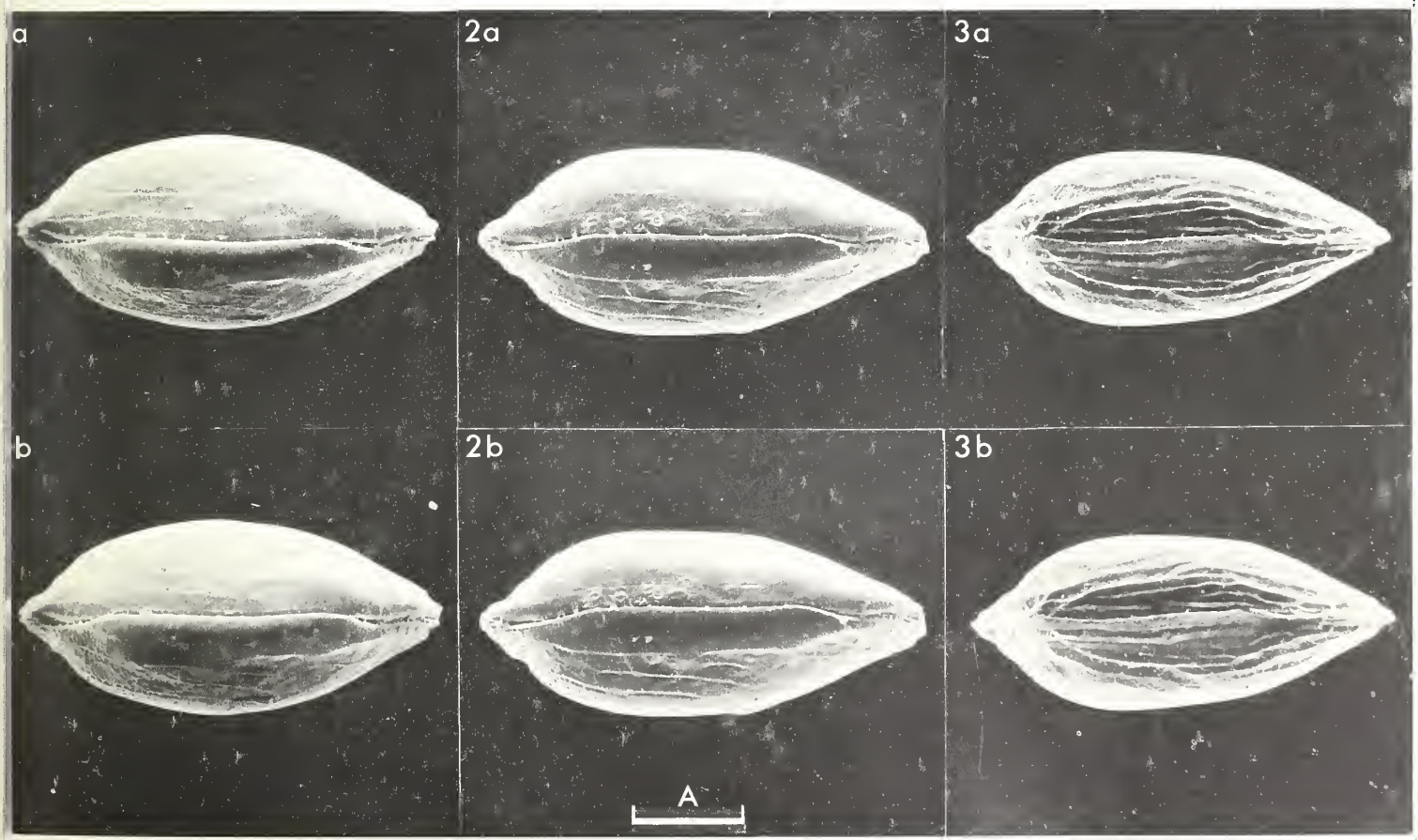
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Figured specimens: Brit. Mus. (Nat. Hist.) nos. 1974.105 (♀ car.: Pl. 2:13:70, fig. 1; Pl. 2:13:76, fig. 3), 1974.106 (♂ car.: Pl. 2:13:70, fig. 2; Pl. 2:13:76, fig. 2), 1974.107 (juv-1 car.: Pl. 2:13:70, fig. 3), 1974.108 (♀ car.: Pl. 2:13:72, fig. 1), 1974.109 (♂ car.: Pl. 2:13:72, fig. 2), 1974.110 (♂ car.: Pl. 2:13:72, fig. 3), 1974.111 (♀ LV: Pl. 2:13:74, figs. 1, 2, 4; Pl. 2:13:76, fig. 1). Hancock Mus., Newcastle-upon-Tyne, no number, but placed in a separate, marked slide (♂ RV: Pl. 2:13:74, figs. 3, 5).

Nos. 1974.105-110 (living at the time of collection), from tufts of the green-alga *Cladophora* in the littoral zone at Osmington Mills, Weymouth Bay, S England (approx. long. 2°23'W, lat. 50°38'N); salinity 34‰, water temperature 19°C; coll. by the author, Sept. 1969.
No. 1974.111 (dead) from The Fleet, Dorset, S England (approx. long. 2°34'W, lat. 50°38'N). Hancock Mus. specimen (dead) from a slide in the Brady Collection from Budle Bay, Northumberland, NE England, close to the type locality (approx. long. 1°45'W, lat. 55°37'N).

Explanation of Plate 2:13:74

Fig. 1, ♀ LV, int. lat. (1974.111, 460 µm long). Figs. 2, 4, ♀ LV, int. lat. (1974.111): fig. 2, post. hinge; fig. 4, ant. hinge. Figs. 3, 5, ♂ RV, int. lat. (Hancock Mus. specimen, 440 µm long): fig. 3, ant. hinge; fig. 5, post. hinge.

Scale A (100 µm ; ×150), fig. 1; scale B (25 µm ; ×500), figs. 3-5.

Remarks: When seen alive, this rather beautiful species is further distinguished by its broad black "saddle-shape" band of colour (hence the name). The instars (Pl. 2:13:70, fig. 3) are quite unlike the adults (Pl. 2:13:70, figs. 1, 2) and it seems that Brady and Norman, working in the latter half of the 19th C., thought them to be a separate species. I have seen many such juveniles, labelled *Cytherura acuta*, in their collections in the Brit. Mus. (Nat. Hist.) and the Hancock Mus., Newcastle-upon-Tyne, but as far as I can ascertain this name was never published.

Cytherura nigrescens G. W. Müller (1894, *Fauna Flora Golf. Neapel.*, Monogr. 21, p. 290) is a totally different species to that of Baird. Müller later realised that the name was pre-occupied, and renamed it (1912, *Das Tierreich*, vol. 31, p. 264), by chance, *Cytherura acuta* !

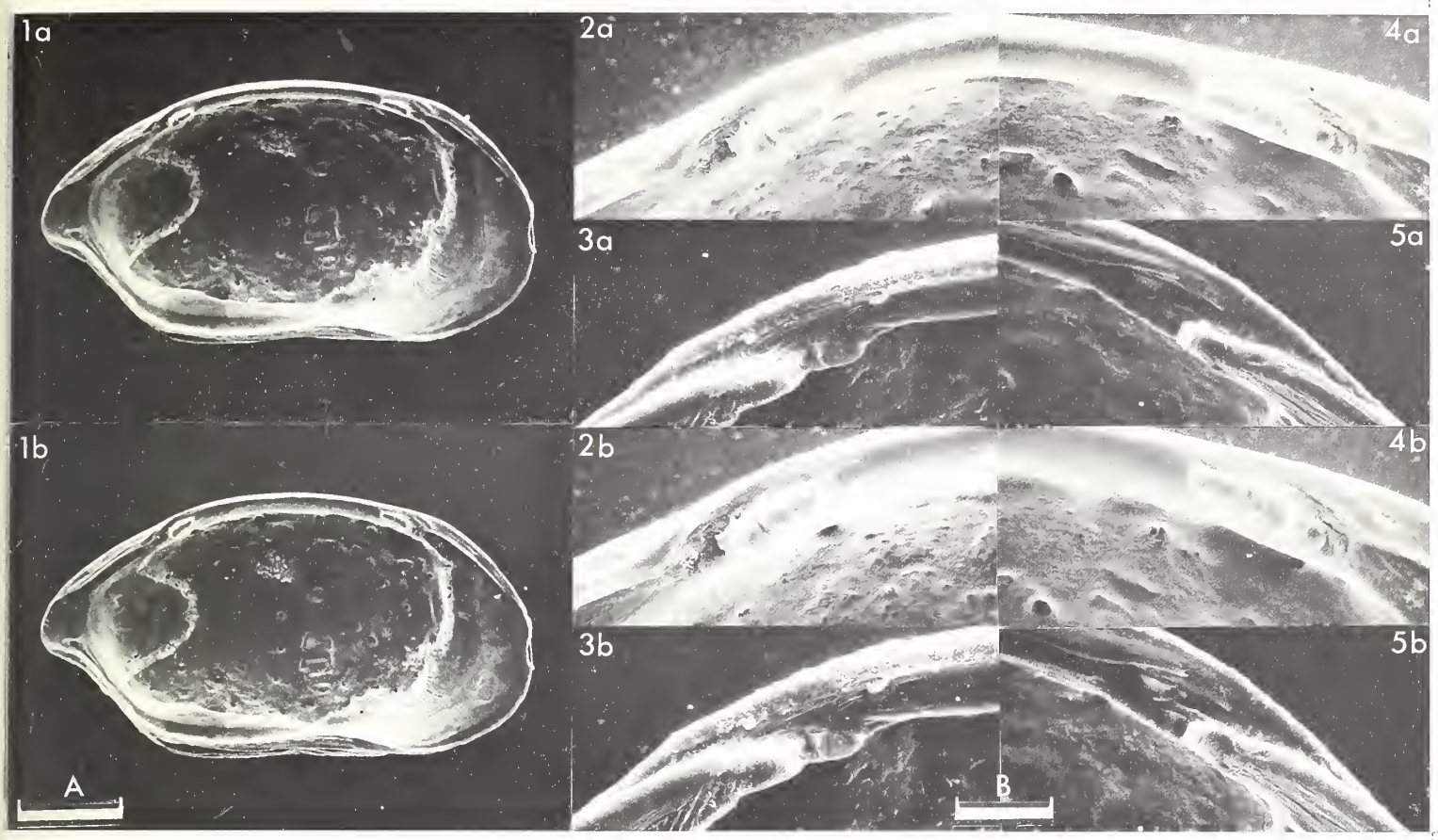
Distribution : A phytal marine ostracod found living in the algal zone of the coasts of NW Europe from the Bay of Biscay in the S (Yassini, 1969, *Bull. Inst. Géol. Bassin Aquitaine*, vol. 7, p. 88) to the Arctic coast of Norway in the N (Sars, 1866). Hagerman (1967, *Commentat. biol.*, vol. 30, p. 5) states that it penetrates the Baltic Sea as far as the Gulf of Finland where the salinity is as low as 6‰.

Stratigraphic range: Pleistocene-Recent.

Explanation of Plate 2:13:76

Fig. 1, ♀ LV, int. musc. sc. (1974.111); fig. 2, ♀ car., detail of post. dors. region showing ornament & celate normal pore & seta (1974.105) [Note attached diatom, *Cocconeis*]; fig. 3, ♂ car., detail of ant. vent. region showing several types of simple pores (1974.106).

Scale A (25 µm ; ×570), fig. 1; scale B (10 µm ; ×1300), fig. 2; scale C (10 µm ; ×1000), fig. 3.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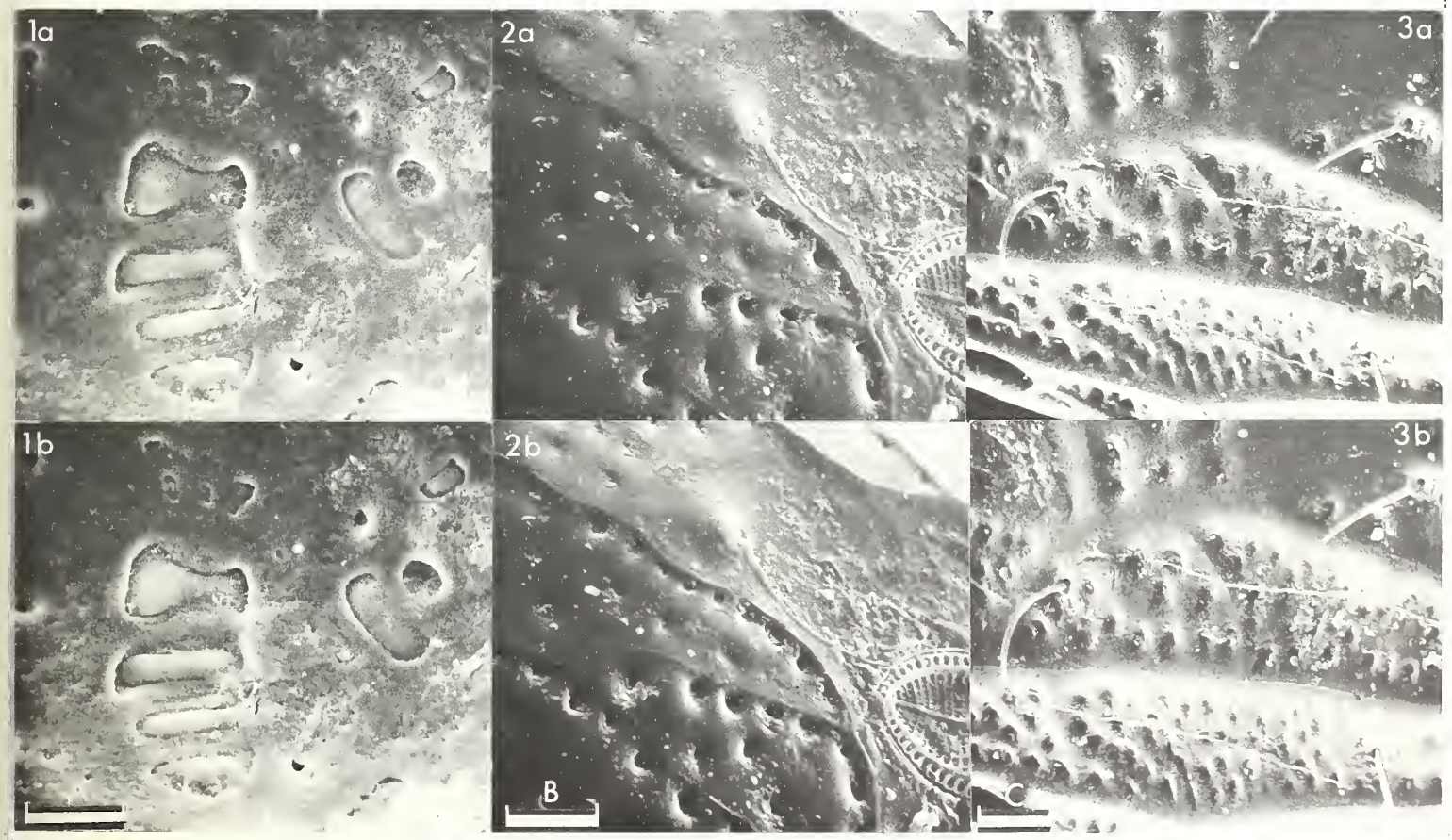
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595.337.14 (119.9) (423.3:162.003.50 + 261.268:162.003.50): 551.351

ON *SEMICYTHERURA CORNUTA* (BRADY)

by J. E. Whittaker
(*British Museum (Natural History), London*)

Semicytherura cornuta (Brady, 1868)

1868 *Cytherura cornuta* sp. nov. G. S. Brady, *Trans. Linn. Soc. Lond.*, vol. 26, pt. 2, p. 445, pl. XXXII, figs. 12-15 [♀].

1868 *Cytherura gibba* (O. F. Müller); G. S. Brady, *ibid.*, p. 444, pl. XXXII, figs. 68-70 [*non C. gibba* (O. F. Müller, 1785)] [♂].

1868 *Cytherura lineata* sp. nov. G. S. Brady, *ibid.*, p. 441, pl. XXXII, figs. 30-34, 67 [juveniles].

1874 *Cytherura gibba* (O. F. Müller); G. S. Brady, W. H. Crosskey & D. Robertson, *Palaeontogr. Soc. (Monogr.)*, vol. for 1874, p. 198, pl. XIII, figs. 26-29 [*non C. gibba* (O. F. Müller, 1785)].

1925 *Cytherura intumescens* sp. nov. G. O. Sars, *An account of the Crustacea of Norway* vol. 9, *Ostracoda*, Bergen Museum, pts. 11, 12, p. 206, pl. XCVI, fig. 1.

Explanation of Plate 2:14:78

Fig. 1, ♀ RV, ext. lat. (lectotype, 580 µm long); fig. 2, ♂ LV, ext. lat. (paralectotype, 640 µm long).

Scale A (100 µm ; ×150), figs. 1, 2.

Lectotype: (here designated) A ♀ RV, housed with the Bradv Collection in the Hancock Mus., Newcastle-upon-Tyne; no catalogue number, but placed in a separate, labelled slide.

[Paralectotype: a ♂ LV. No catalogue number; housed as for the lectotype].

Type locality: Birtirbuy (= Bertraghboy) Bay, Co. Galway, W Ireland (approx. long. 9°90'W, lat. 53°23'N). Recent.

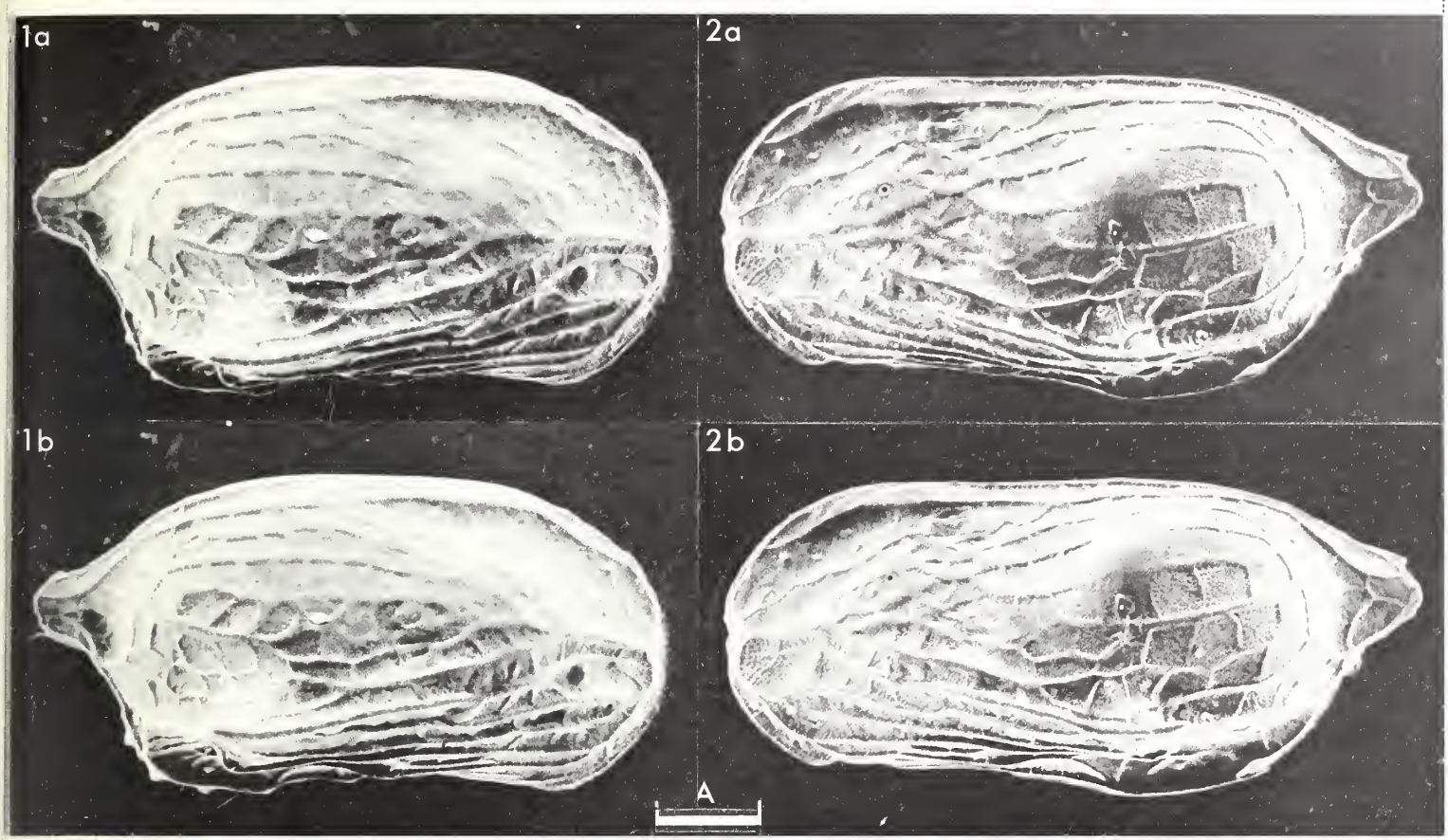
Figured specimens: Hancock Mus. specimens: Lectotype (♀ RV: Pl. 2:14:78, fig. 1), paralectotype (♂ LV: Pl. 2:14:78, fig. 2); both from the type locality, coll. by G. S. Brady in 1868. Brit. Mus. (Nat. Hist.) nos. 1974.120 (♀ car.: Pl. 2:14:80, fig. 1), 1974.121 (♂ car.: Pl. 2:14:80, fig. 2), 1974.122 (♂ RV: Pl. 2:14:82, fig. 1), 1974.123 (♂ LV: Pl. 2:14:82, figs. 2, 3), 1974.124 (juv-1 car.: Pl. 2:14:84, fig. 1), 1974.125 (♂ LV: Pl. 2:14:84, figs. 2, 3).

Nos. 1974.120-122, 124, 125 (living at the time of collection), were obtained from a sample of green-algae in East Fleet, Dorset, S England (approx. long. 2°29'W, lat. 50°36'N); salinity 34‰, water temperature 20°C, shallow water; coll. Aug. 1969 by J. E. Whittaker. No. 1974.123 (dead) is from Bran Point, Weymouth Bay, S England (approx. long. 2°22'W, lat. 50°38'N).

Explanation of Plate 2:14:80

Fig. 1, ♀ car., ext. dors. (1974.120, 550 µm long); fig. 2, ♂ car., ext. dors. (1974.121, 660 µm long).

Scale A (100 µm ; ×150), figs. 1, 2.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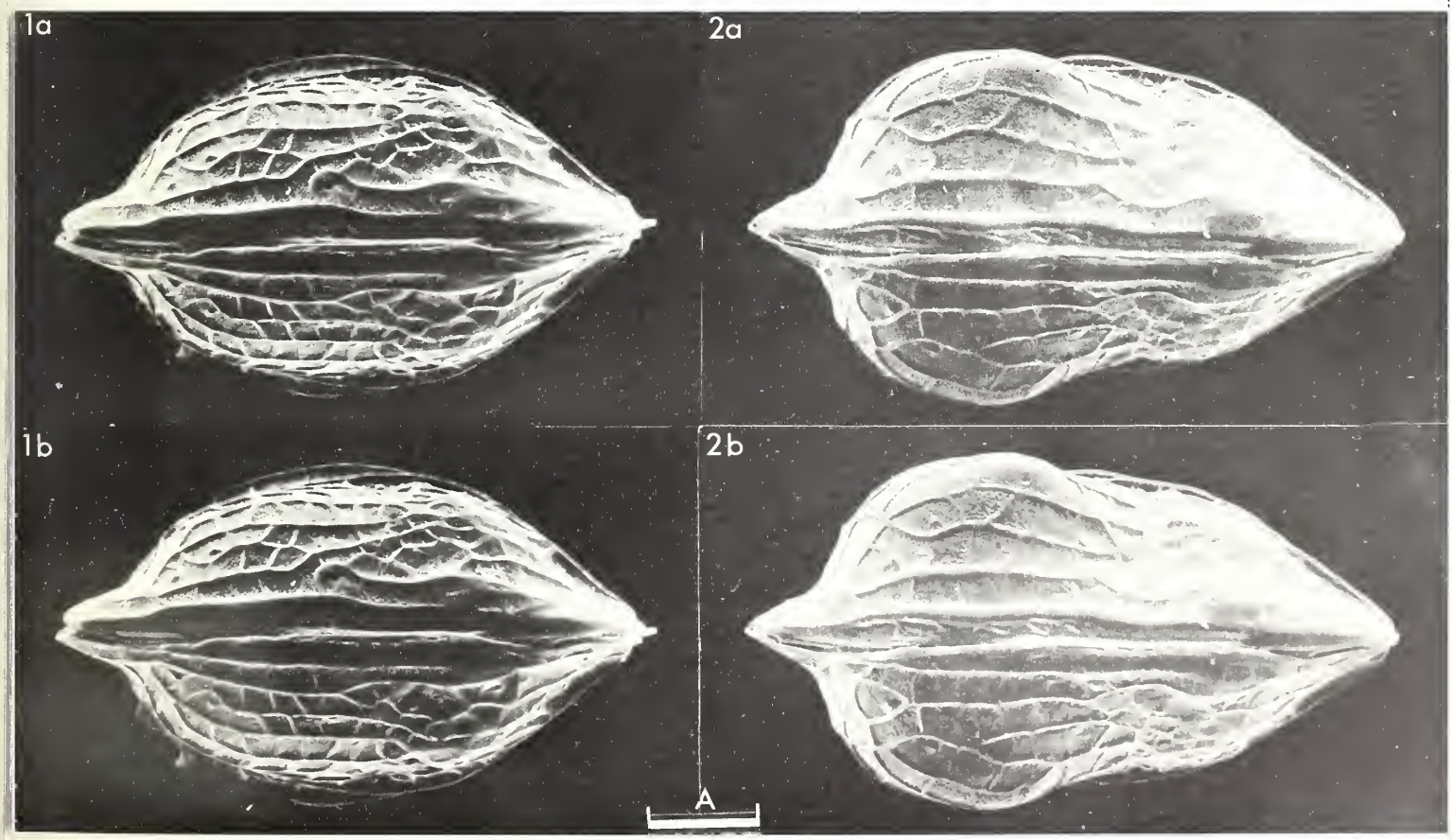
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Diagnosis: Carapace large for the genus (*c.* 0.55-0.65 mm long). Ventral surface ornamented by strong longitudinal costae, one of which gives rise to a small posteroventral ala; rest of shell reticulate and finely punctate, but ornament often subdued anterodorsally. Internally, posterior line of concrescence reaches strongly forward, in males to a point well into the anterior half of the valve. Sexual dimorphism pronounced, males more elongate and strongly inflated posteriorly.

Remarks: The opportunity is taken to clarify and re-illustrate this poorly known NW European species. Confusion arose in the first place partly from the misleading drawing of the female in lateral view in Brady's monograph of 1868 (pl. XXXII, fig. 12) - which may have been accidentally transposed with fig. 68 on the same plate - and partly to Brady's own confusion of the male of this species with that of *Cytherura gibba* (O. F. Müller). This latter aspect was discussed in my paper on *C. gibba* (*Stereo-Atlas of Ostracod Shells*, vol. 1, pt. 4, pp. 273-280, 1973).

Thanks to the kind co-operation of Dr. M. E. Christiansen (Zoological Mus., Oslo) I have also been able to study the types of *C. intumescens* Sars, 1925. The carapace of Sars' female holotype (no. F.1424) was compared with females in Brady's slides of Birtirbuv Bay, and the copulatory appendage of the male (in slide no. F.7996) with that shown in Pl. 2:14:82, fig. 1 of this paper and other dissected males of *S. cornuta* in my collection. I am firmly of the opinion that the two are conspecific.

Explanation of Plate 2:14:82

Fig. 1, ♂ RV, int. lat. showing soft-parts (1974.122, 590 µm long). Figs. 2, 3, ♂ LV, int. lat. (1974.123, 620 µm long); fig. 2, ant. hinge; fig. 3, post. hinge.

Scale A (100 µm ; ×165), fig. 1; scale B (25 µm ; ×400), figs. 2, 3.

Remarks (contd.): The only species which could now be confused with *S. cornuta* in NW European waters is *S. acuticostata* (Sars, 1866, *Forh. VidenskSelsk. Krist.*, vol. for 1865, p. 76). The latter, however, is smaller (adults *c.* 0.50 mm long), has a number of strong longitudinal carinae on the upper surface of its valves and has males which are relatively less tumid posteriorly.

Distribution: Recorded as *Cytherura cornuta* only from the coasts of Britain and Ireland. Two records, under the name of *C. intumescens*, however, extend the geographical range to the NW coast of France (de Vos, 1957, *Archs. Zool. exp. gén.*, vol. 95, p. 42) and the S coast of Norway (Sars, 1925). I was unable to find the specimens from the Dardanelles, Turkey (see Brady, op. cit., p. 445) but it is thought they would most likely have belonged to one of G. W. Müller's Mediterranean species, a number of which look superficially like *S. cornuta*.

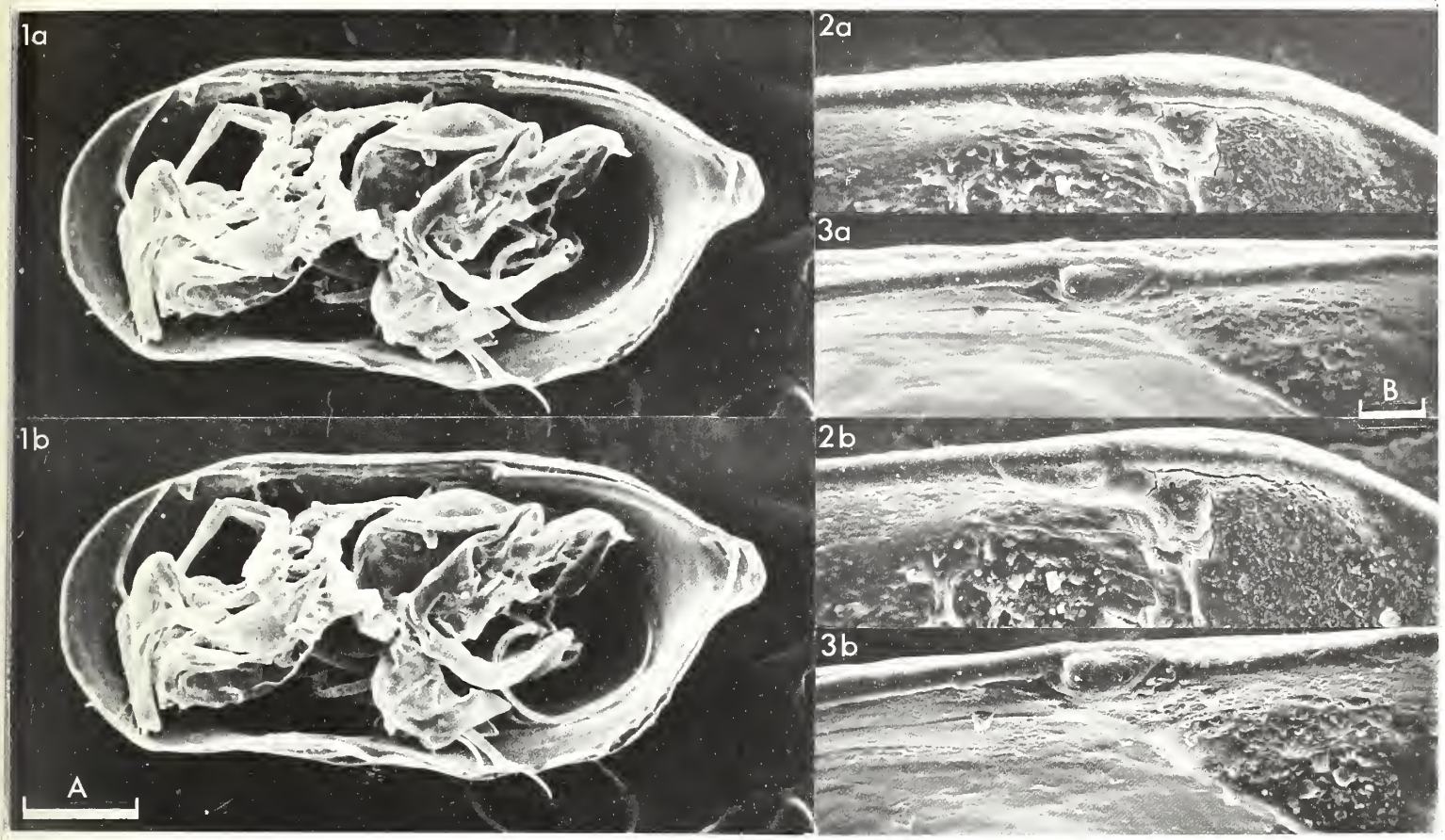
Little is known of the ecology of the species. Of the previous live records, Sars merely states that it was found between 10 and 30 fathoms (18-54 m), de Vos is not specific, but the biotope of her material would appear to be sea-grass or marine-algae. I have found it myself on marine-algae in the littoral zone.

Stratigraphical range: Pleistocene-Recent.

Explanation of Plate 2:14:84

Fig. 1, juv-1 car., ext. rt. lat. (1974. 124, 470 µm long). Figs. 2, 3, ♂ LV, ext. lat. (1974.125, 590 µm long): fig. 2, detail of ant. dors. region, showing subdued ornament, eye-spot & simple pores; fig. 3, detail of post-vent. region, showing well developed ornament.

Scale A (100 µm ; ×150), fig. 1; scale B (25 µm ; ×400), figs. 2, 3.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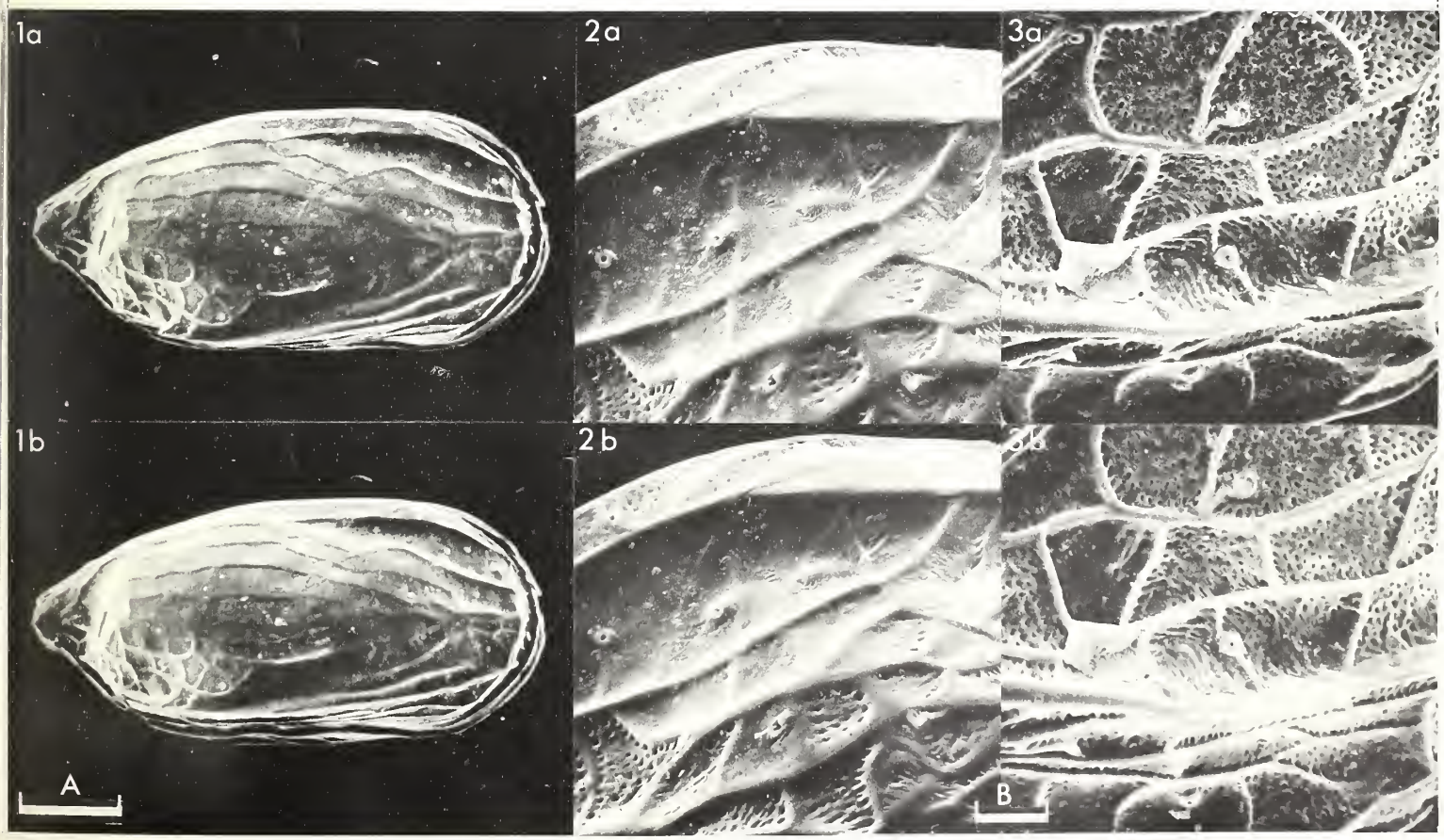
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595.337.14 (119.9) (423.3:162.003.50 + 261.27:162.006.55 + 261.268:162.002.50): 551.351

ON *SEMICYTHERURA SELLA* (SARS)

by John E. Whittaker
(*British Museum (Natural History), London*)

Semicytherura sella (Sars, 1866)

1866 *Cytherura sella* sp. nov. G. O. Sars, *Forh. VidenskSelsk. Krist.*, vol. for 1865, p. 73.
1868 *Cytherura cuneata* sp. nov. G. S. Brady, *Trans. Linn. Soc. Lond.*, vol. 26, pt. 2, p. 442, pl. XXXII, figs. 35-38, 63 [♂].
1869 *Cytherura flavescens* sp. nov. G. S. Brady, *Ann. Mag. nat. Hist.*, ser. 4, vol. 3, p. 49, pl. VIII, figs. 13-15 [♀].
1957 *Semicytherura sella* (Sars); C. W. Wagner, *Sur les Ostracodes du Quaternaire récent des Pays-Bas et leur utilisation dans l'étude géologique des dépôts holocènes*, Mouton & Co., The Hague, p. 85, pl. XL.

Type specimens: The Curators of Invertebrates at the Zoological Museums of Oslo and Bergen (respectively, M. E. Christiansen and J. Kjennerud) report (pers. comm.) that no specimens of *Cytherura sella* exist in Sars' collections at these repositories. The type must, therefore, be presumed lost.

Type locality: Oslo Fjord, Norway.

Explanation of Plate 2:15:86

Fig. 1, ♀ car., ext. lt. lat. (1974.112, 410 µm long); fig. 2, ♂ car., ext. lt. lat. (1974.113, 430 µm long); fig. 3, juv-1 car.: ext. lt. lat. (1974.114, 360 µm long).

Scale A (100 µm ; ×150), figs. 1-3.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. 1974.112 (♀ car.: Pl. 2:15:86, fig. 1), 1974.113 (♂ car.: Pl. 2:15:86, fig. 2; Pl. 2:15:92, fig. 1), 1974.114 (juv-1 car.: Pl. 2:15:86, fig. 3), 1974.115 (♀ car.: Pl. 2:15:88, fig. 1), 1974.116 (♂ car.: Pl. 2:15:88, fig. 2; Pl. 2:15:92, fig. 2), 1974.117 (♂ car.: Pl. 2:15:88, fig. 3; Pl. 2:15:92, fig. 3), 1974.118 (♀ LV: Pl. 2:15:90, figs. 1, 3, 4), 1974.119 (♀ RV: Pl. 2:15:90, fig. 2).

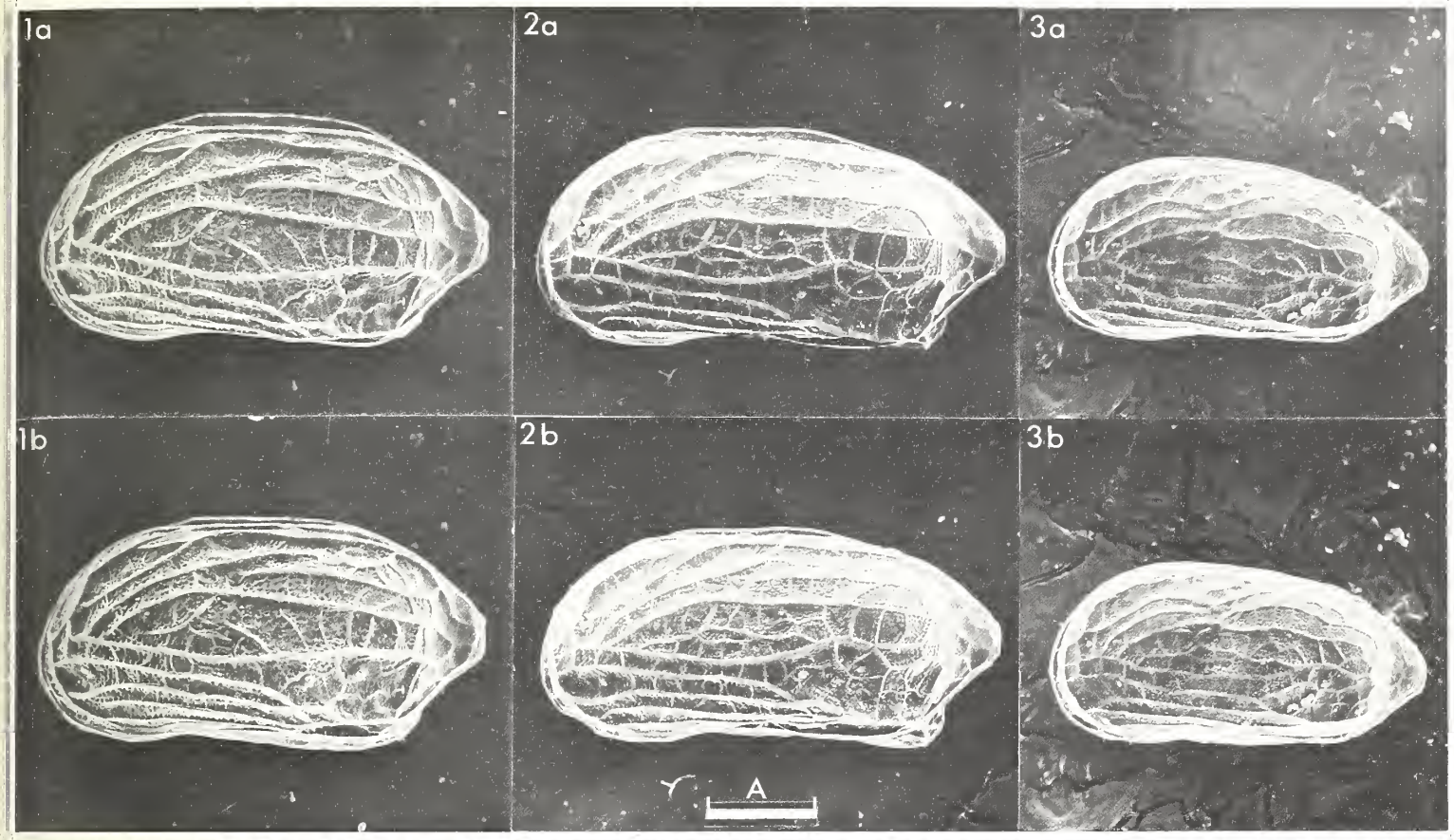
Nos. 1974.112-117 from various stations in East Fleet, Dorset, S England (approx. long. 2°29-31'W, lat. 50°35-36'N); coll. by the author from sand scrapings and sediment from the holdfasts of seaweeds; living at the time of collection in salinities of 30-35‰ and water temperatures of 5-20°C. No. 1974.118 (dead) from off Tarbert, Loch Fyne, W Scotland (approx. long. 5°26'W, lat. 55°52'N), taken from a slide (no. 1900.3.6.337) in the Brit. Mus. (Nat. Hist.), collected 1876. No. 1974.119 (dead) from the entrance to Christchurch Harbour, Hampshire, S England (approx. long. 1°45'W, lat. 50°43'N); coll. by Dr. J.W. Murray, Univ. of Bristol, in 1960, to whom thanks are due for the donation of the material.

Diagnosis: Adults small (*c.* 0.40-0.45 mm long), dorsal and ventral margins of shell sub-parallel. Ornament reticulate, but longitudinal costae more strongly developed than transverse costae; intervening areas finely punctate. Males more elongate and tumid mid-posteriorly.

Explanation of Plate 2:15:88

Fig. 1, ♀ car., ext. dors. (1974.115, 430 µm long); fig. 2, ♂ car., ext. dors. (1974.116, 450 µm long); fig. 3, ♂ car., ext. vent. (1974.117, 430 µm long).

Scale A (100 µm ; ×140), figs. 1-3.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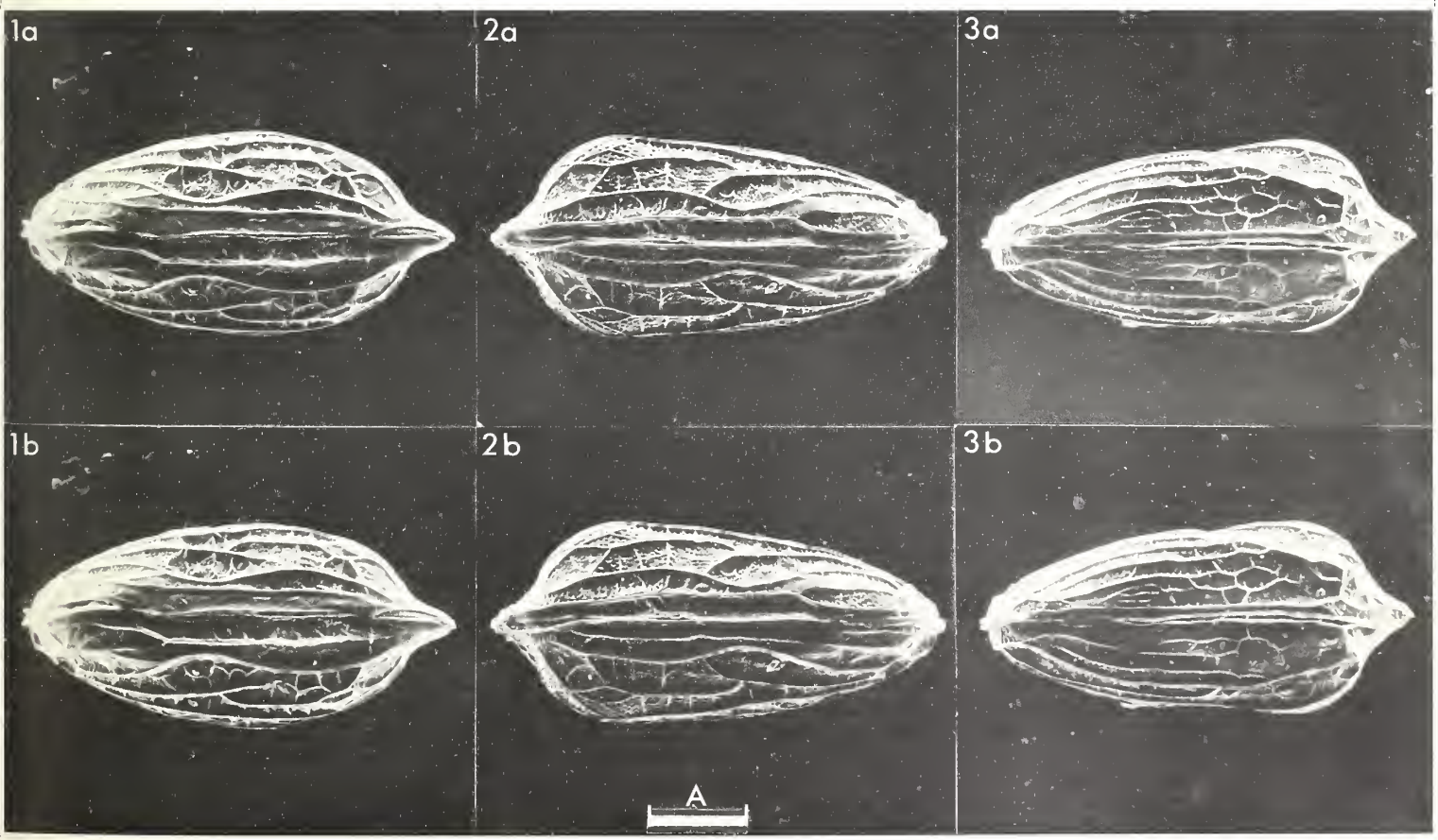
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Remarks: The forms described as *C. cuneata* and *C. flavescens* are both synonymous with the present species; the reasons for the confusion being given by Brady & Norman, 1889 (*Scient. Trans. R. Dubl. Soc.*, ser. 2, vol. 4, p. 194). On studying more material from various localities in Britain and comparing them with the Scandinavian types of *C. sella*, these authors somewhat belatedly corrected the mistake.

Distribution: A marine or near-marine species confined, on present evidence, to the coasts of NW Europe. Reliable living records exist from the Arcachon Basin, SW France (Yassini, 1969, *Bull. Inst. Géol. Bassin Aquitaine*, vol. 7, p. 90) in the S, to the S coast of Norway (Sars, 1866) in the N, including the Baltic Sea. Unlike most species of *Semicytherura*, which appear to be phytal in habit, *S. sella* seems to be confined to the benthos, mostly silt and sand substrates or amongst sediment trapped by the holdfasts of marine-algae. It is, in fact, probably a "silt-eater", as the stomach sac was seen on dissection by the author to be full of fine sand grains when viewed under cross-polarised light.

Stratigraphic range: Pleistocene-Recent.

Explanation of Plate 2:15:90

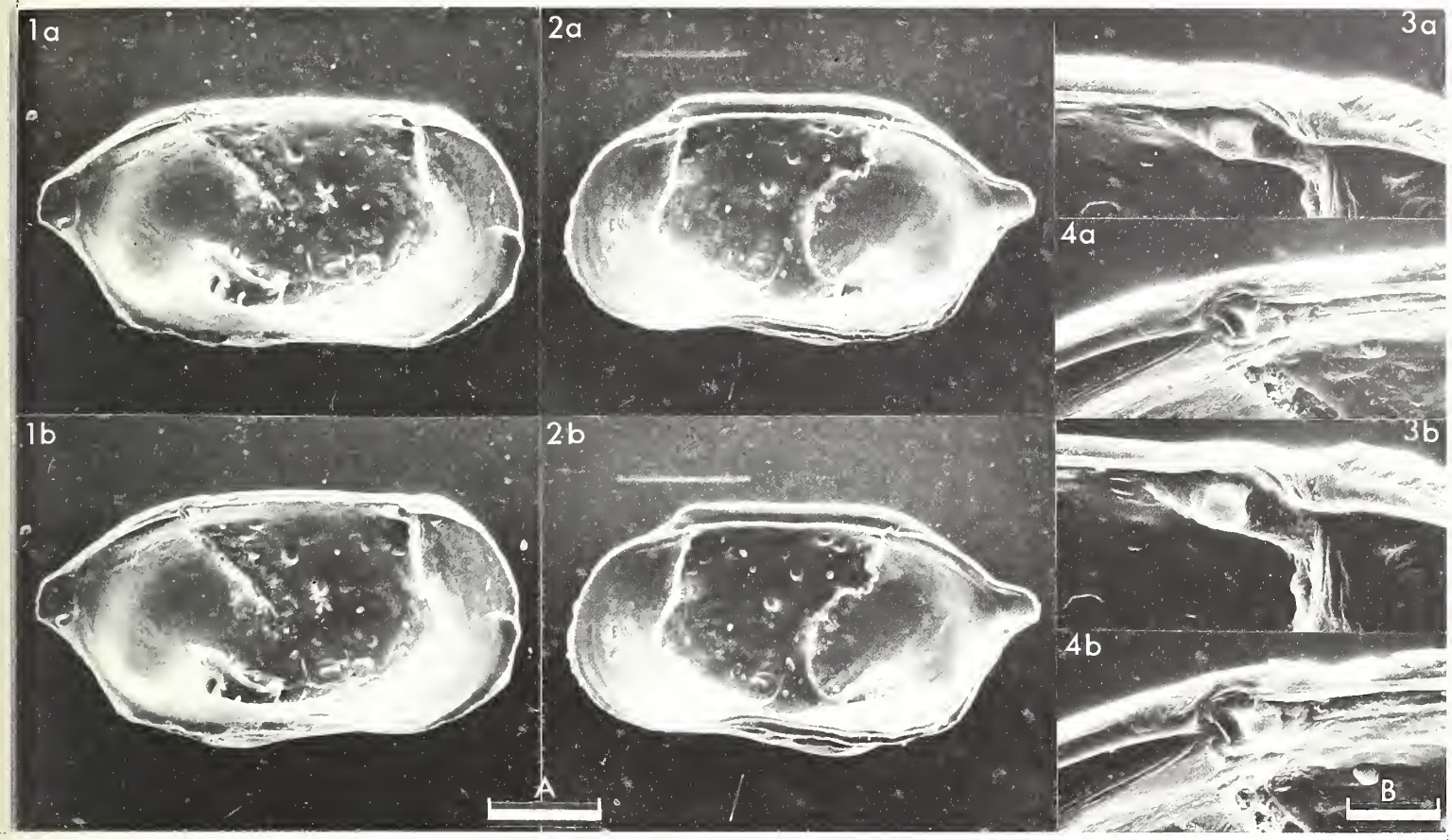
Fig. 1, ♀ LV, int. lat. (1974.118, 450 µm long); fig. 2, ♀ RV, int. lat. (1974.119, 440 µm long). Figs. 3, 4, ♀ LV, int. lat. (1974.119): fig. 3, ant. hinge; fig. 4, post. hinge.

Scale A (100 µm ; ×150), figs. 1, 2; scale B (25 µm ; ×500), figs. 3, 4.

Explanation of Plate 2:15:92

Fig. 1, ♂ car., detail of mid-region of shell (1974.113); fig. 2, ♂ car., detail of ant. dors. region, showing eye-spot (1974.116); fig. 3, ♂ car., detail of post. part of venter, showing simple pore & bifid seta (1974.117).

Scale (25 µm ; ×730), figs. 1, 2; scale B (10 µm ; ×1800), fig. 3.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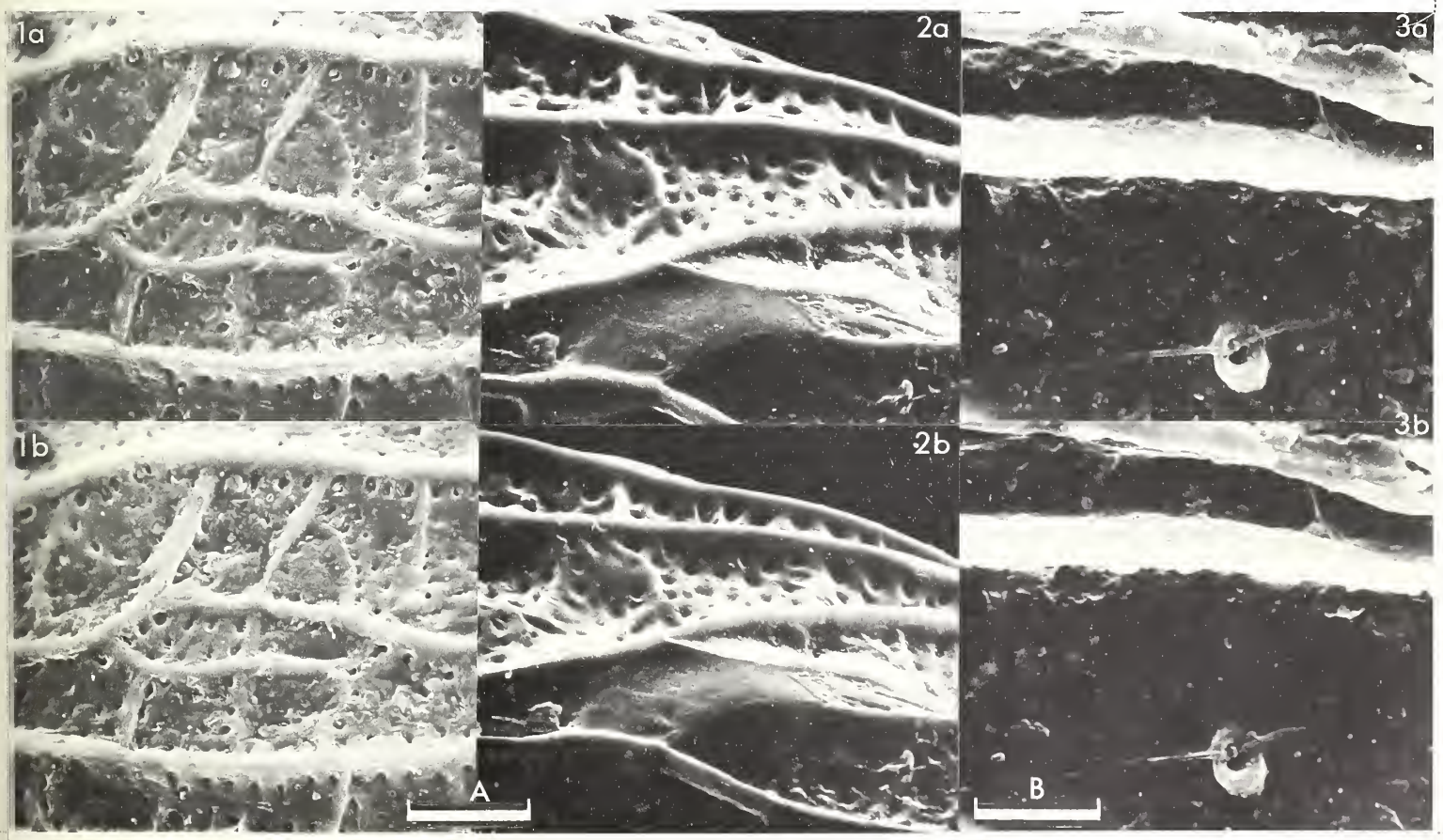
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595.337.14 (119.1) (262.2:161.035.36): 551.351

ON *SEMICYTHERURA SULCATA* (G. W. MÜLLER)

by Neriman Doruk
(University of Leicester, England)

Semicytherura sulcata (G. W. Müller, 1894)

1894 *Cytherura sulcata* sp. nov. G. W. Müller, *Fauna Flora Golf. Neapel*, Monogr. 21, p. 297, pl. 17, figs. 4, 10; pl. 19, fig. 19.

1959 *Semicytherura sulcata* (G. W. Müller); G. Ruggieri, *Atti Soc. ital. Sci. nat.*, vol. 98, p. 205.

1968 *Semicytherura sulcata* (G. W. Müller); M. Masoli, *Memorie Mus. trident. Sci. nat.*, vol. 17, fasc. 1, p. 45, pl. 10, figs. 156, 157.

Holotype: Housed in the collections of the Crustacea Section of the Zoological Museum, Berlin; catalogue no. 9225. See Diebel, *Geologie*, vol. 11, pt. 2, p. 245, 1962.

Type locality: Recent, Bay of Naples, W Italy; associated with the sea-grass *Posidonia*.

Explanation of Plate 2:16:94

Fig. 1, ♂ RV, ext. lat. (IO 5623, 470 µm long); fig. 2, ♂ LV, ext. lat. (IO 5624, 520 µm long).

Scale A (250 µm ; ×183), fig. 1; scale B (250 µm ; ×164), fig. 2.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. IO 5623 (♂ RV: Pl. 2:16:94, fig. 1), IO 5624 (♂ LV: Pl. 2:16:94, fig. 2; Pl. 2:16:96, figs. 1, 3), IO 5625 (♀ RV: Pl. 2:16:96, fig. 2; Pl. 2:16:100, fig. 2), IO 5626 (♂ RV: Pl. 2·16:98, fig. 1), IO 5627 (♀ LV: Pl. 2:16:98, fig. 2), IO 5628 (♂ RV: Pl. 2:16:100, fig. 1). All from a drilling off Iskenderun Bay, S coast of Turkey, 400 ft below sea-floor. Pleistocene; presumed shallow marine/littoral. Approx. long. 35°59'E, lat. 36°37'N.

Diagnosis: Carapace elongate; surface costate (diagnostic pattern), punctate in intervening sulci, number of puncta highly variable.

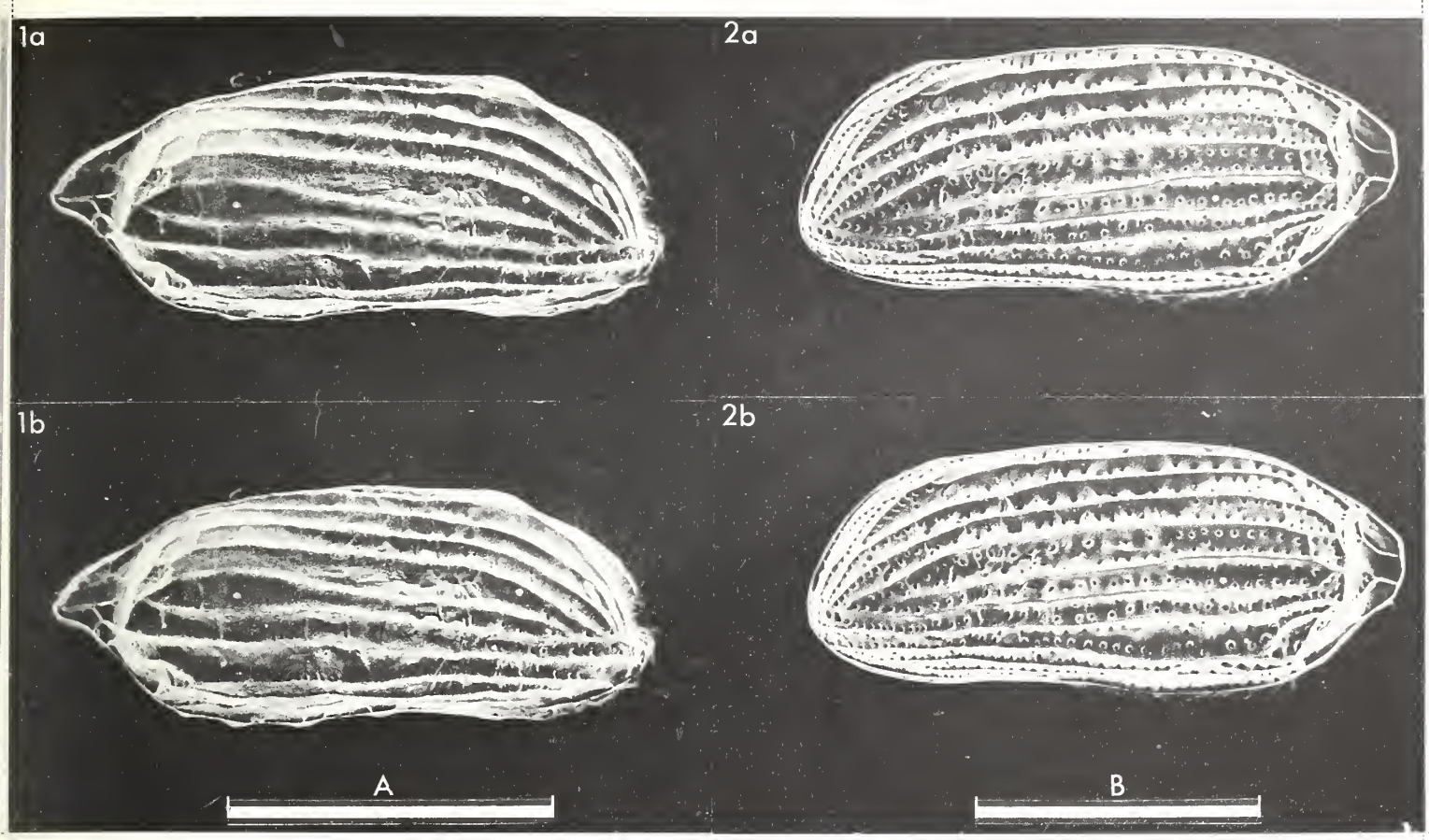
Remarks: Variation in the development of puncta is continuous from very few (Pl. 2:16:94, fig. 1; Pl. 2:16:98, figs. 1, 2) to very many (Pl. 2:16:94, fig. 2; Pl. 2:16:100, fig. 1) and even to coalescence of puncta to form fossae (Pl. 2:16:100, fig. 2). Sexual dimorphism fairly strong; males more elongate and slightly inflated posteriorly (cf. ♂: Pl. 2:16:98, fig. 1 with ♀: Pl. 2:16:98, fig. 2).

Distribution: Recent in Gulf of Naples (type locality) and Adriatic Sea (Masoli, op. cit.), Italy.
Quaternary in Italy (Ruggieri, op. cit.).
Pleistocene in Turkey (herein).

Explanation of Plate 2:16:96

Fig. 1, ♂ LV, int. lat. (IO 5624); fig. 2, ♀ RV, int. lat. (IO 5625, 470 µm long); fig. 3, ♂ LV, int. musc. sc. (IO 5624).

Scale A (250 µm ; ×135), fig. 1; scale B (250 µm ; ×151), fig. 2: scale C (100 µm ; ×418), fig. 3.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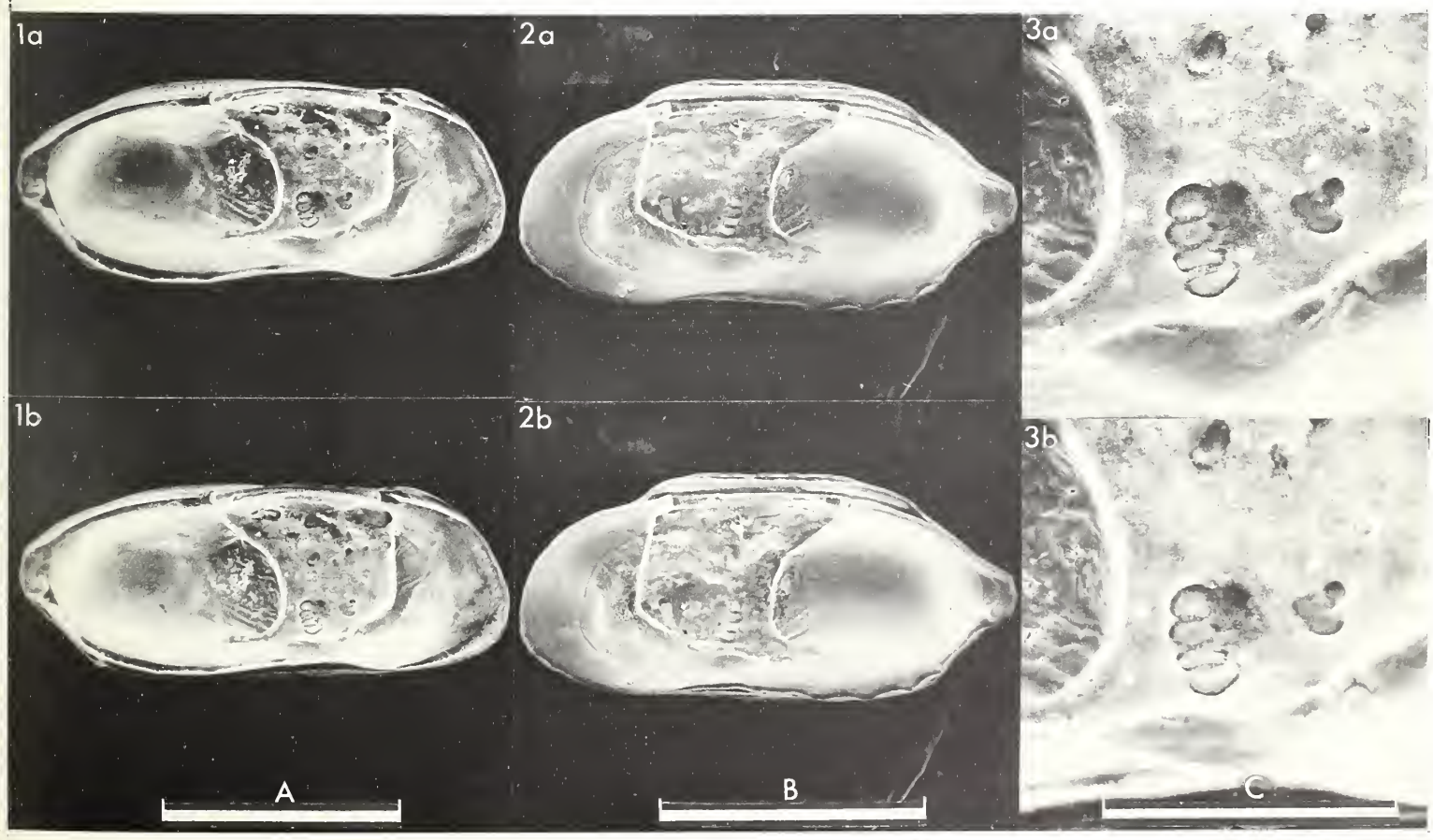
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Explanation of Plate 2:16:98

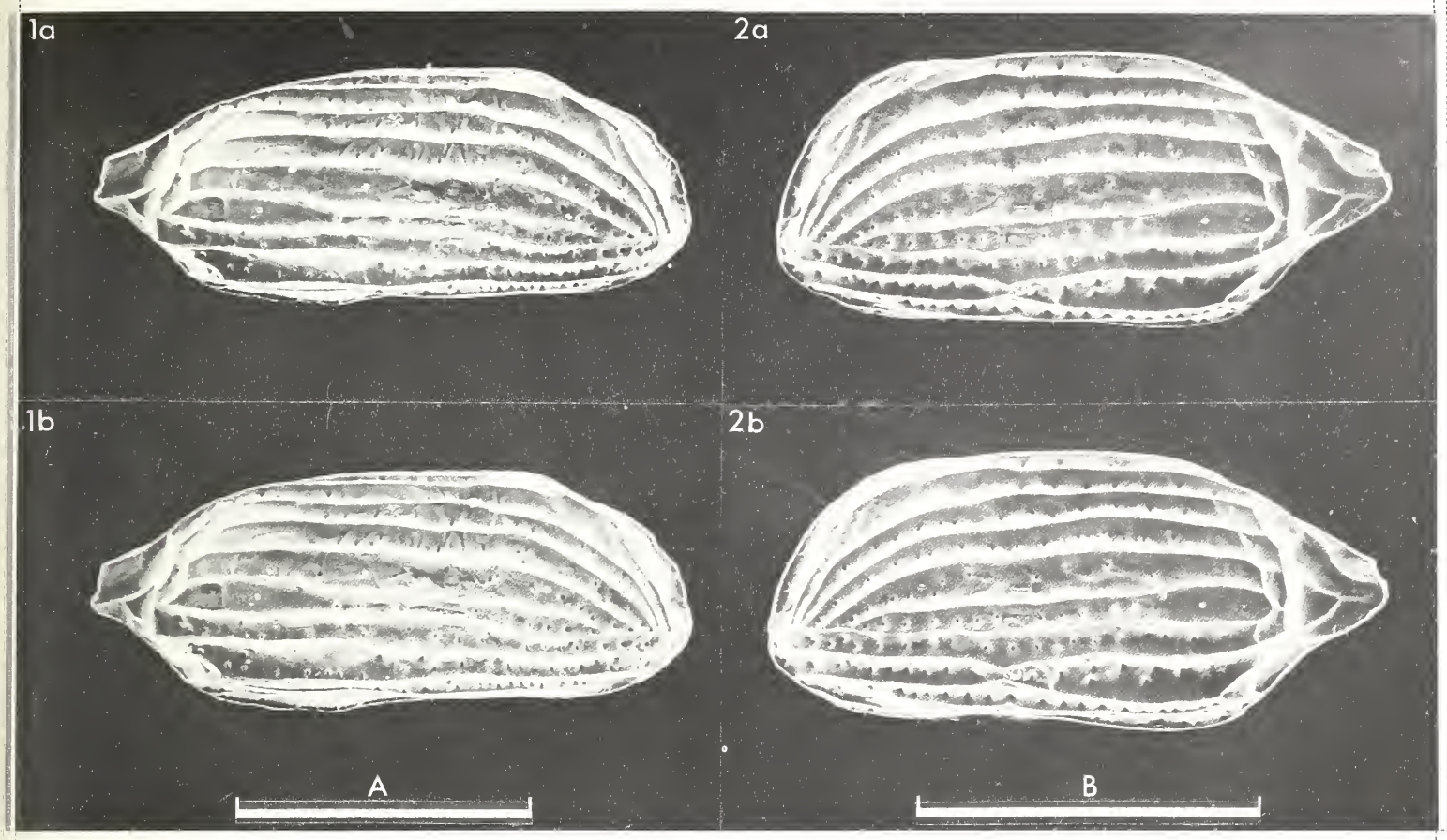
Fig. 1, ♂ RV, ext. lat. (IO 5626, 520 µm long); fig. 2, ♀ LV, ext. lat. (IO 5627, 440 µm long).

Scale A (250 µm ; ×164), fig. 1; scale B (250 µm ; ×198), fig. 2.

Explanation of Plate 2:16:100

Fig. 1, ♂ RV, ext. lat. (IO 5628, 520 µm long); fig. 2, ♀ RV, ext. lat. (IO 5625).

Scale A (250 µm ; ×158), fig. 1; scale B (250 µm ; ×181), fig. 2.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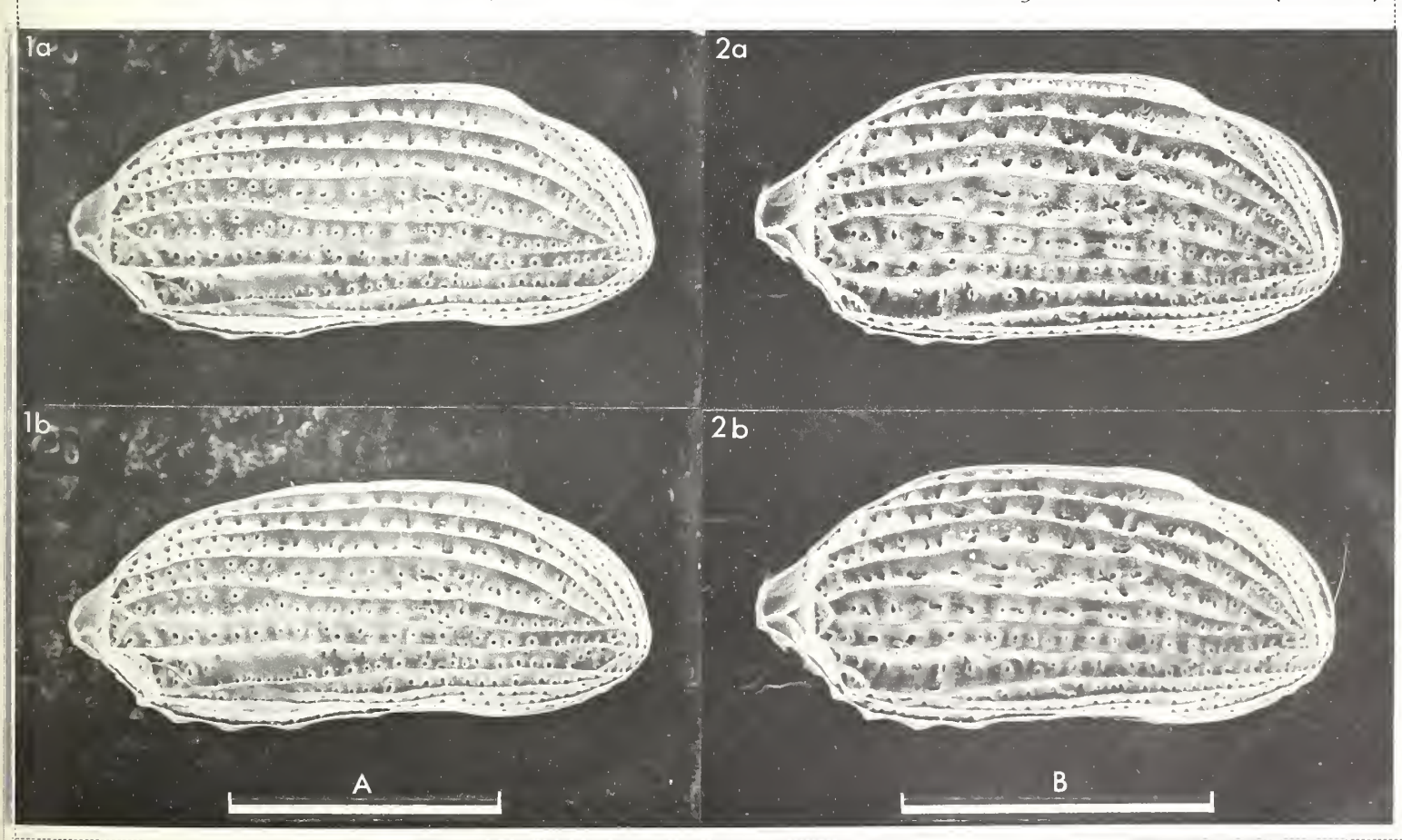
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595.337.14 (118.22 + 119.1) (262.2:161.035.36): 551.351

ON *SEMICYTHERURA RUGGIERII* (PUCCI)

by Neriman Doruk
(University of Leicester, England)

Semicytherura ruggierii (Pucci, 1955)

1955 *Cytherura ruggierii* sp. nov. A. Pucci, *G. Geol.*, ser. 2, vol. 25, p. 167, pl. 1, figs. 3, 4, text-fig. 1.
1972 *Semicytherura ruggierii* (Pucci); H. Uffenorde, *Göttinger Arb. Geol. Paläont.*, no. 13, p. 92, pl. 11, figs. 2, 4.

Holotype: ♂ LV, O. C. R., slide no. 878; in the Istituto di Geologia e Paleontologia, University of Palermo, Italy.

Type locality: The Tronto Valley, E Italy; approx. long. 13°45'E, lat. 42°50'N. Pleistocene clay (Calabrian).

Diagnosis: Smooth to reticulate surface, sexually dimorphic ornament.

Explanation of Plate 2:17:102

Fig. 1, ♀ RV, ext. lat. (IO 5636, 500 µm long); fig. 2, ♂ LV, ext. lat. (broken, 480 µm long); fig. 3, detail of a celate normal pore (IO 5637).

Scale A (250 µm ; ×164), fig. 1; scale B (250 µm ; ×170), fig. 2; scale C (5 µm ; ×4756), fig. 3.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. IO 5636 (♀ RV: Pl. 2:17:102, fig. 1), IO 5637 (♂ RV: Pl. 2:17:102, fig. 3; Pl. 2:17:104, fig. 2), IO 5638 (♀ LV: Pl. 2:17:104, fig. 1). The valve (♂ LV) figured in Pl. 2:17:102, fig. 2; Pl. 2:17:104, fig. 3, has been broken after the stereoscan process.

IO 5636 and IO 5638 from a drilling off Iskenderun Bay, S coast of Turkey, 430 ft below sea-bed; Pleistocene; presumed shallow marine; approx. long. 35°59'E, lat. 36°37'N. IO 5637 and figured broken specimen from a drilling off S coast of Turkey, 630 ft below sea-floor; Plio-Pleistocene; presumed littoral; approx. long. 35°45'E, lat. 36°28'N.

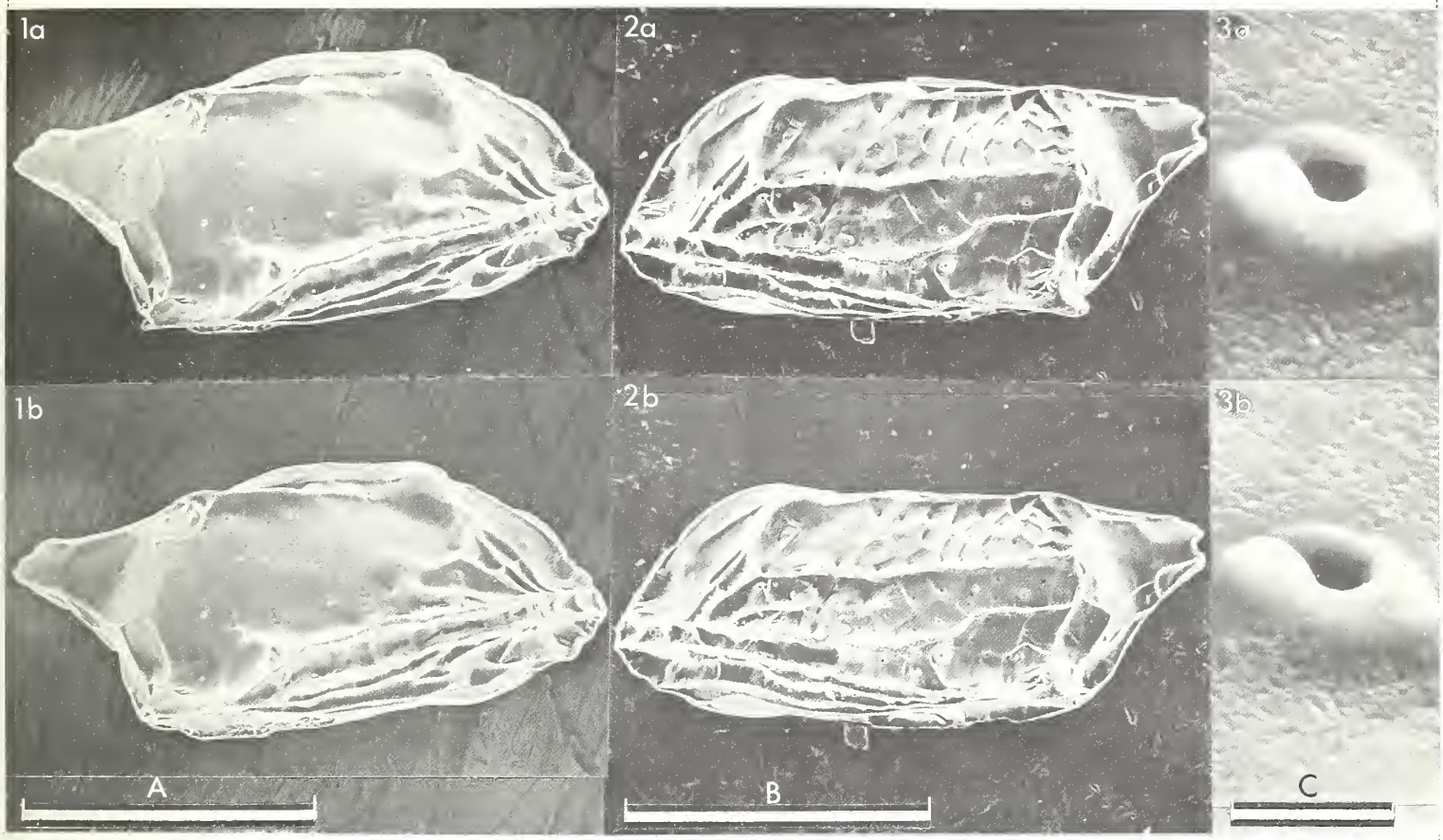
Remarks: Variable in ornament, surface smooth between costae (see Pl. 2:17:102, fig. 1) or can be wholly reticulate (as figured in Uffenorde, op. cit., pl. 11, figs. 2, 4). But variation is continuous; intermediate form figured in Pl. 2:17:102, fig.2. Sexual dimorphism very pronounced; males more elongate and with median rib lacking in females (cf. ♀: Pl. 2:17:102, fig. 1, with ♂: Pl. 2:17:102, fig. 2).

Distribution: Plio-Pleistocene and Pleistocene in Turkey; Pleistocene in Italy (Pucci, op. cit.). Recent in the Adriatic (Uffenorde, op. cit.) and Aegean Seas (Barbeito-Gonzalez, 1971, *Mitt. hamb. zool. Mus. Inst.*, vol. 6, p. 293), E Mediterranean.

Explanation of Plate 2:17:104

Fig. 1, ♀ LV, int. lat. (IO 5638, 470 µm long); fig. 2, ♂ RV, int. lat. (IO 5637, 490 µm long); fig. 3, ♂ LV, int. musc. sc. (broken).

Scale A (250 µm ; ×149), fig. 1; scale B (250 µm ; ×140), fig. 2; scale C (100 µm ; ×518), fig. 3.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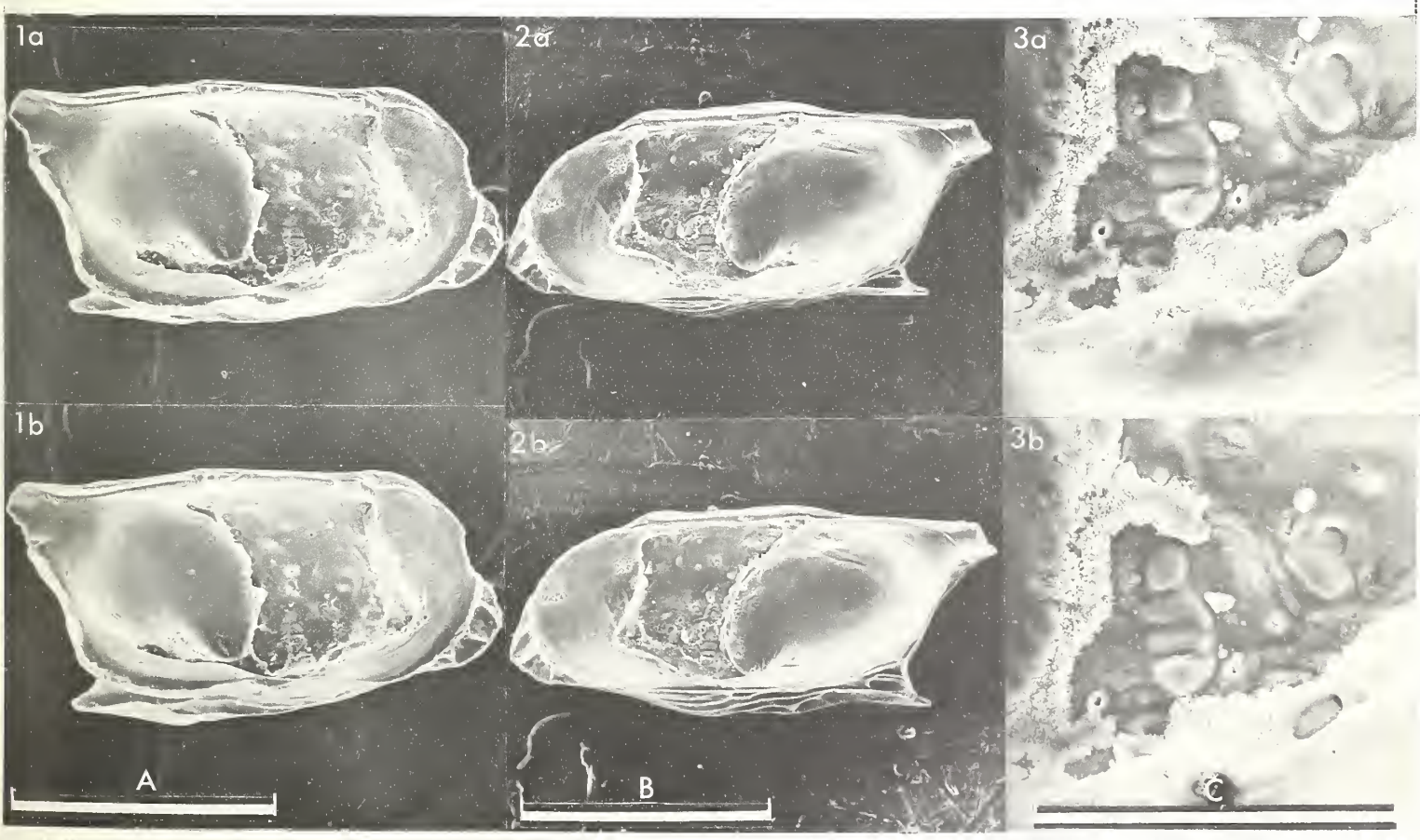
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C

ON *SEMICYTHERURA INCONGRUENS* (G. W. MÜLLER)

by Neriman Doruk
(University of Leicester, England)

Semicytherura incongruens (G. W. Müller, 1894)

1894 *Cytherura incongruens* sp. nov. G. W. Müller, *Fauna Flora Golf. Neapel*, Monogr. 21, p. 296, pl. 17, figs. 2, 7, 8; pl. 19, fig. 7.

1968 *Semicytherura incongruens* (G. W. Müller); M. Masoli, *Memorie Mus. trident. Sci. nat.*, vol. 17, fasc. 1, p. 40, pl. 10, figs. 141-144.

Holotype: Housed in the collections of the Crustacea Section, Zoological Museum, Berlin; catalogue no. 9224. See Diebel, *Geologie*, vol. 11, pt. 2, p. 245, 1962.

Type locality: Müller's type came from a sample of *Posidonia* sea-grass, Bay of Naples, W Italy.

Diagnosis: Carapace, ovate. Ventral half of shell longitudinally costate, variably reticulate and strongly punctate, remainder smooth to punctate.

Explanation of Plate 2:18:106

Fig. 1, ♀ RV, ext. lat. (IO 5620, 480 µm long); fig. 2, ♀ LV, ext. lat. (IO 5621, 560 µm long).

Scale A (250 µm ; ×180), fig. 1; scale B (250 µm ; ×154), fig. 2.

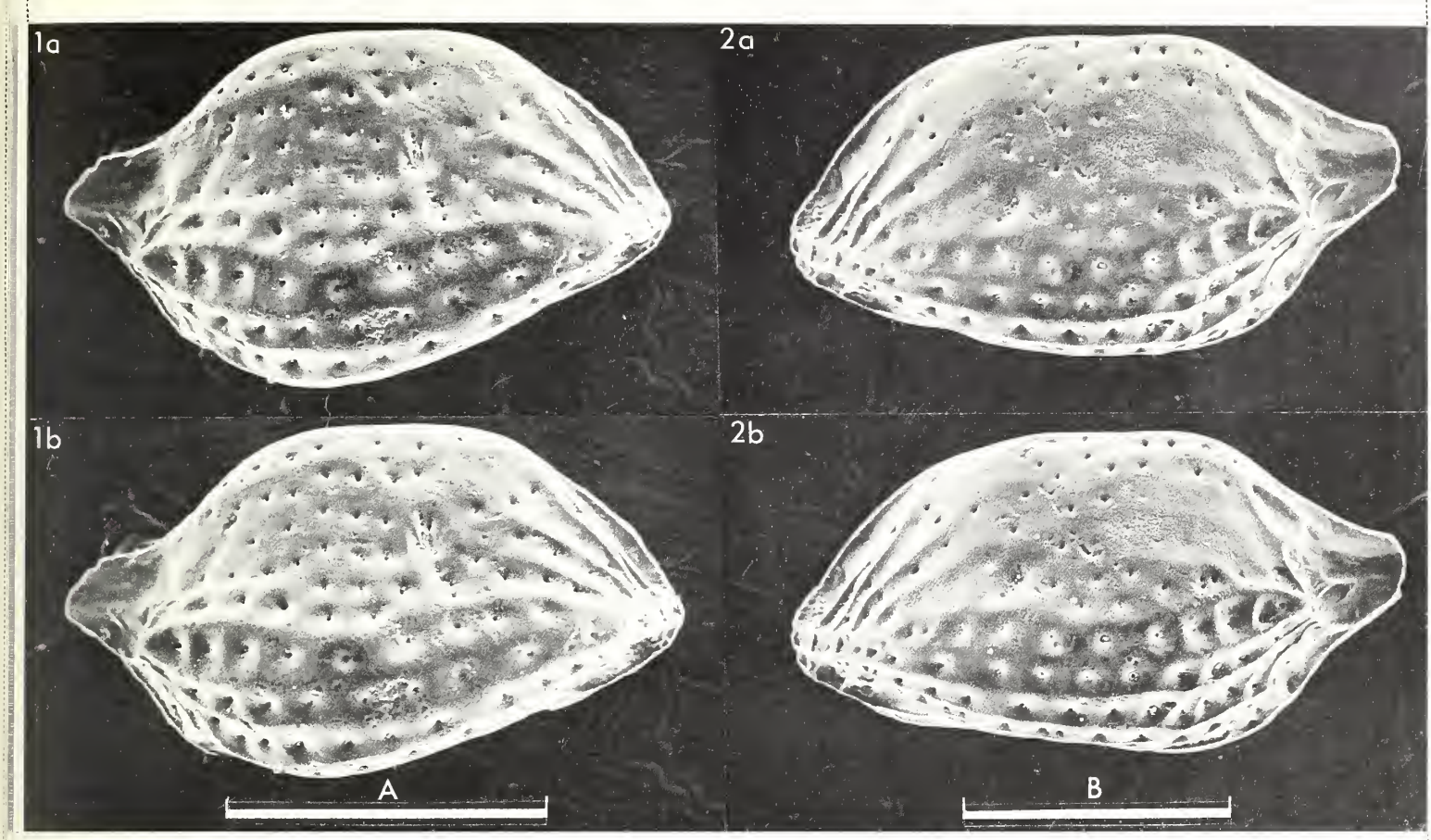
Figured specimens: Brit. Mus. (Nat. Hist.) IO 5620 (♀ RV: Pl. 2:18:106, fig. 1), IO 5621 (♀ LV: Pl. 2:18:106, fig. 2; Pl. 2:18:108, fig. 1; Pl. 2:18:112, fig. 2), IO 5622 (♂ RV: Pl. 2:18:108, figs. 2, 3; Pl. 2:18:110, fig. 1), IO 5725 (♀ RV: Pl. 2:18:112, fig. 1), IO 5726 (♂ LV: Pl. 2:18:110, fig. 2). IO 5620 and IO 5621 from drillings off Iskenderun Bay, S coast of Turkey, 1050 ft below sea-floor; Plio-Pleistocene; presumed shallow marine; approx. long. 35°45'E, lat. 36°28'N. IO 5622 from drillings off Iskenderun Bay, Turkey, 600 ft below sea-floor; Pleistocene; presumed shallow marine; approx. long. 35°59'E, lat. 36°37'N. IO 5725 and IO 5726 from drillings off S coast of Turkey, 400 ft below sea-floor; Pleistocene; presumed shallow marine; approx. long. 35°04'E, lat. 36°26'N.

Remarks: Very variable in number of puncta which coincide with normal pore canals. Dorsal surface can be quite free of puncta. Sexual dimorphism distinct; female tumid towards venter, seen dorsally widest point in middle; males more elongate, with slight inflation mid-posteriorly and posteroventral depression.

Explanation of Plate 2:18:108

Fig. 1, ♀ LV, int. lat. (IO 5621); fig. 2, ♂ RV, int. lat. (IO 5622, 625 µm long); fig. 3, ♂ RV, int. musc. sc. (IO 5622).

Scale A (250 µm ; ×122), fig. 1; scale B (250 µm ; ×110), fig. 2; scale C (100 µm ; ×407), fig. 3.


1a
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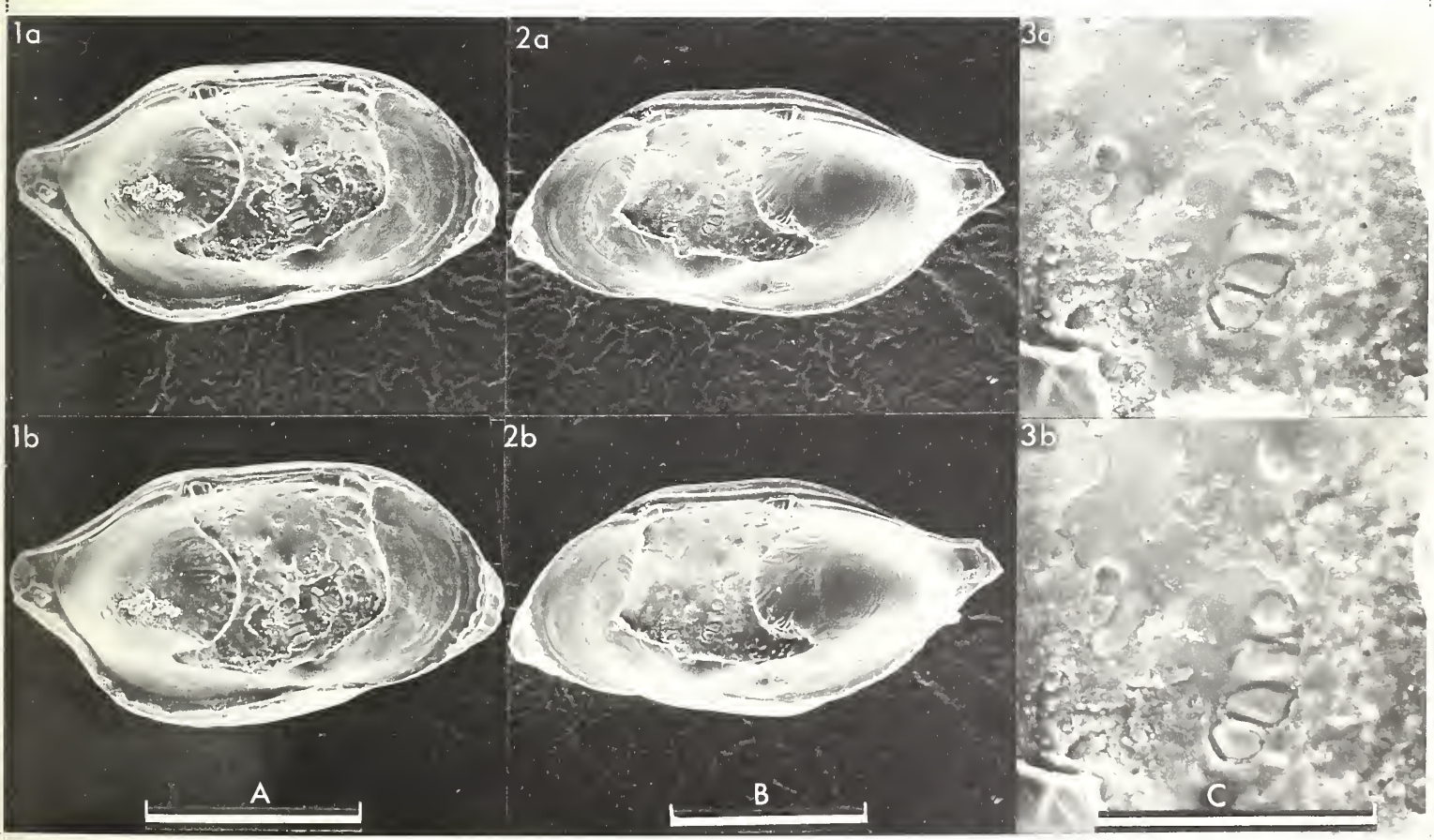
1a
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C

Distribution: Recent in Gulf of Naples (type locality), Adriatic Sea (Masoli, op. cit.; Uffenorde, 1972, *Göttinger Arb. Geol. Paläont.*, no. 13, p. 90), Aegean Sea (Barbeito-Gonzales, 1971, *Mitt. hamb. zool. Mus. Inst.*, vol. 67, p. 293), Rhône Delta, S France (Kruit, 1955, *Verh. K. ned. geol. mijnb Genoot.*, Geol. ser., vol. 15, p. 486).

Pliocene-Pleistocene in Turkey (herein).

Explanation of Plate 2:18:110

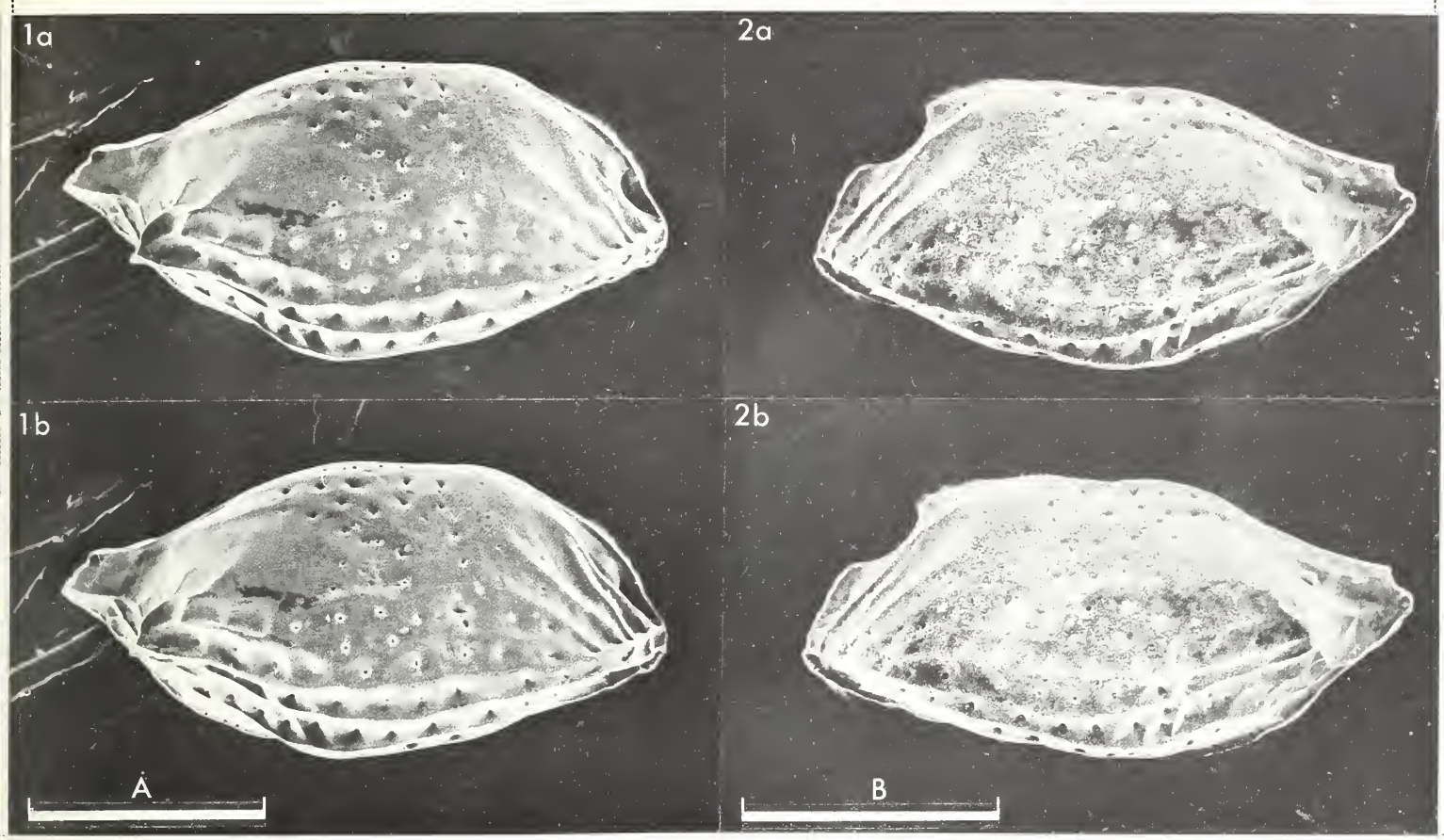
Fig. 1, ♂ RV, ext. lat. (IO 5622); fig. 2, ♂ LV, ext. lat. (IO 5726, 600 µm long).

Scale A (250 µm ; ×131), fig. 1; scale B (250 µm ; ×139), fig. 2.

Explanation of Plate 2:18:112

Fig. 1, ♀ RV, ext. lat. (IO 5725, 580 µm long); fig. 2, ♀ LV, ext. vent. obl. (IO 5621).

Scale A (250 µm ; ×143), fig. 1; scale B (250 µm ; ×147), fig. 2.


1a
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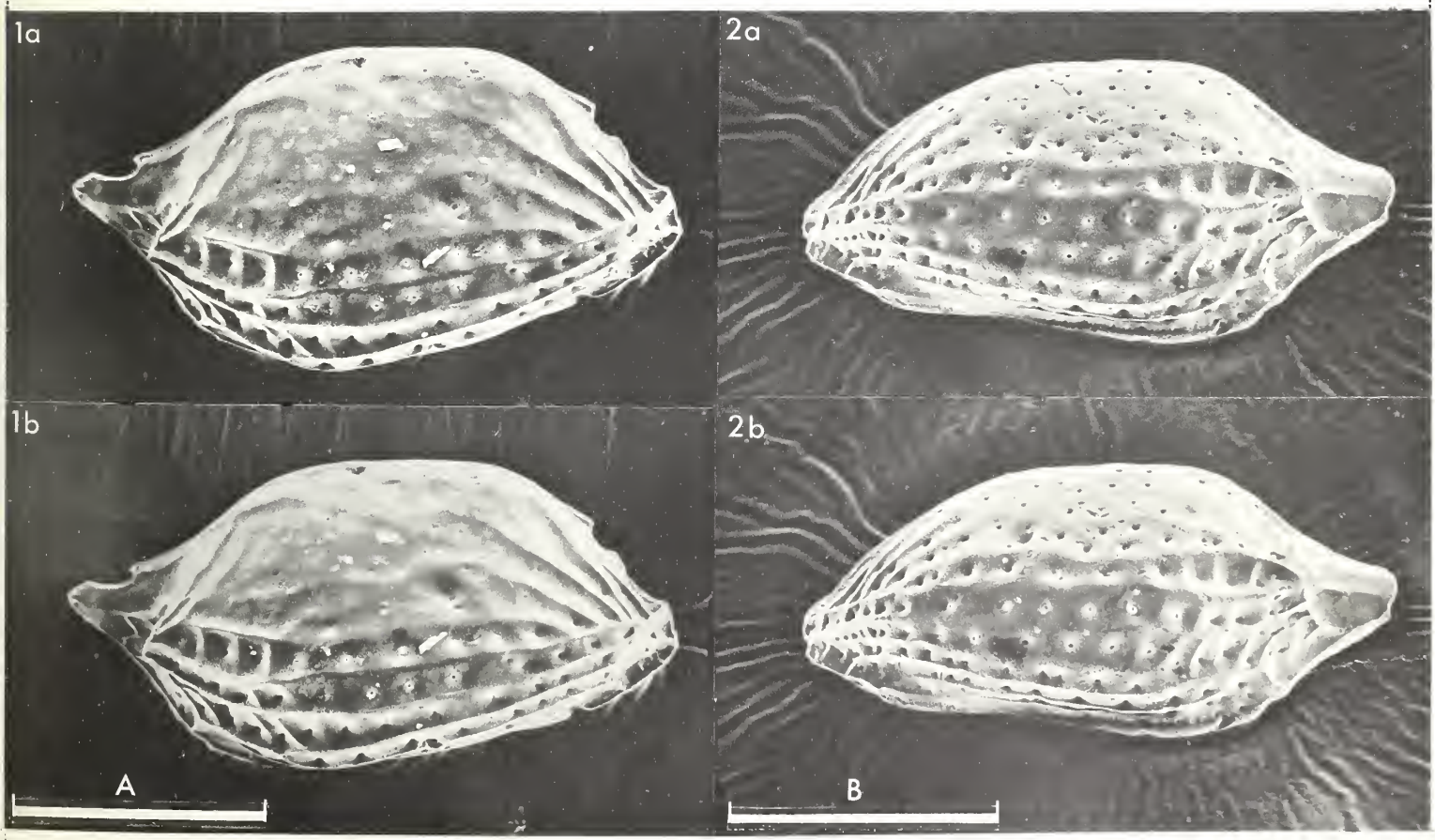

1a
2a
1b
2b
A
B

595.337.14 (119.1) (262.2:161.035.36): 551.351

ON *SEMICYTHERURA EXUDATA* DORUK sp. nov.

by Neriman Doruk
(University of Leicester, England)

Semicytherura exudata sp. nov.

1968 *Semicytherura* sp. 1. M. Masoli, *Memorie Mus. trident. Sci. nat.*, vol. 17, fasc. 1, p. 47, pl. 3, fig. 26; pl. 10, figs. 158, 159.

Holotype: Brit. Mus. (Nat. Hist.) no. IO 5633, ♀ RV.

Type locality: Drillings off Iskenderun Bay, S coast of Turkey; approx. long. 35°59'E, lat. 36°37'N; 400 ft below sea-floor. Pleistocene.

Derivation of name: Latin, "exude", with reference to the appearance of the normal pores.

Diagnosis: Three main ribs form a distinctive triangular pattern, rest of shell finely reticulate. Normal pores raised with swollen rims (see Pl. 2:19:114, fig. 3).

Explanation of Plate 2:19:114

Fig. 1, ♀ RV, ext. lat. (IO 5633, 490 µm long); fig. 2, ♂ LV, ext. lat. (IO 5634, 510 µm long); fig. 3, ♂ LV, detail of mid-dors. area with celate pores (IO 5634).

Scale A (250 µm ; ×170), fig. 1; scale B (250 µm ; ×164), fig. 2; scale C (20 µm ; ×656), fig. 3.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. IO 5633 (♀ RV: Pl. 2:19:114, fig. 1; Pl. 2:19:116, figs. 2, 3), IO 5634 (♂ LV: Pl. 2:19:114, figs. 2, 3), IO 5635 (♀ LV: Pl. 2:19:116, fig. 1). All from the type locality; presumed shallow marine.

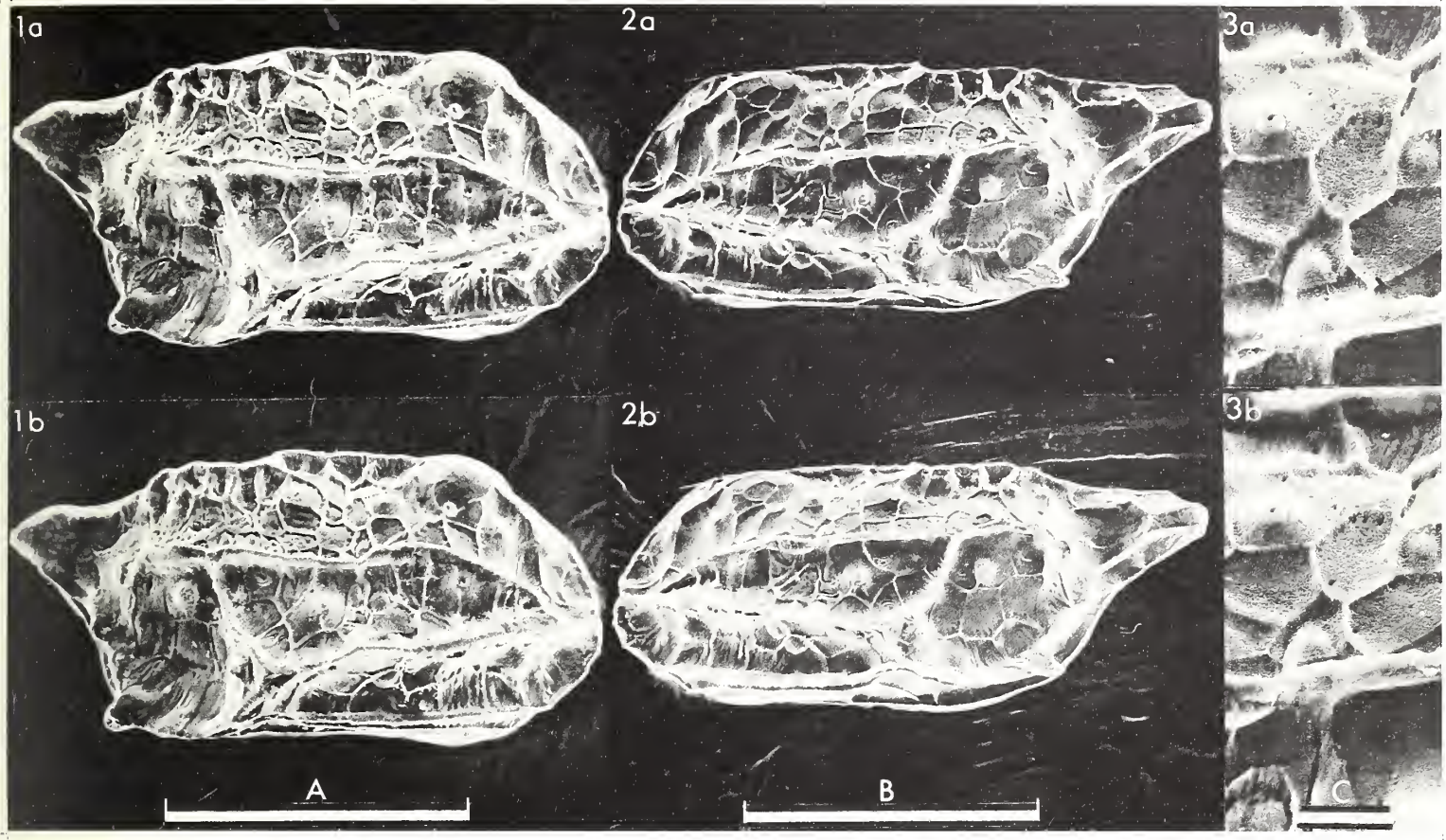
Remarks: Differs from the closely related species *S. punctata* (G. W. Müller) (1894, *Fauna Flora Golf. Neapel*, Monogr. 21, pp. 292, 293) and *S. tergestina* Masoli (op. cit., p. 160) in ornament detail. Strength of ribs variable, as is development of eye tubercle. Sexual dimorphism strong, males more elongate (see Pl. 2:19:114, figs. 1, 2).

Distribution: Known only, as far as I am aware, from the Pleistocene of S Turkey (herein) and the Recent of the N Adriatic (Masoli, op. cit.).

Explanation of Plate 2:19:116

Fig. 1, ♀ LV, int. lat. (IO 5635, 530 µm long); fig. 2, ♀ RV, int. lat. (IO 5633); fig. 3, ♀ RV, int. musc. sc. (IO 5633).

Scale A (250 µm ; ×133), fig. 1; scale B (250 µm ; ×141), fig. 2; scale C (100 µm ; ×437), fig. 3.


1a
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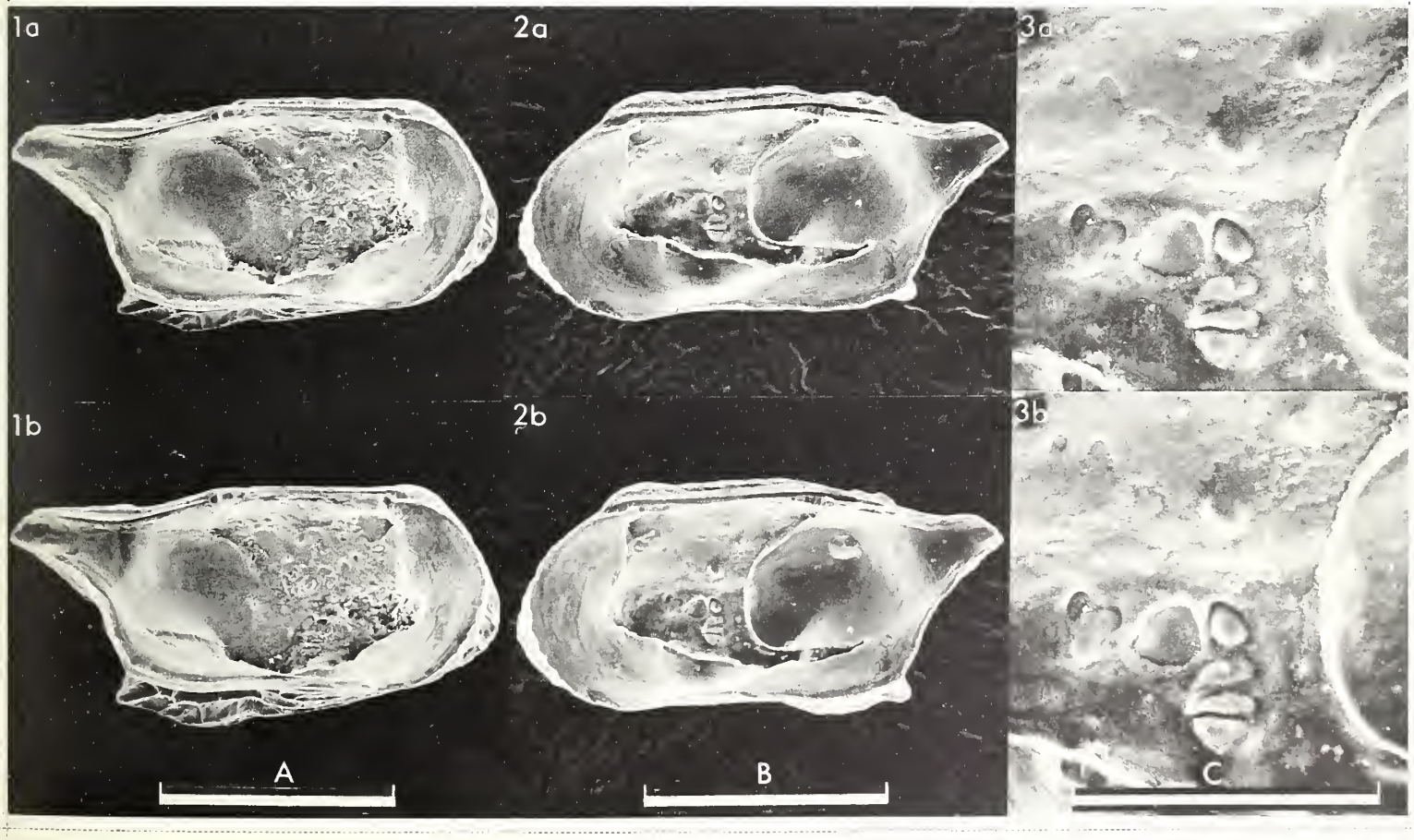
1a
2a
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1b
2b
3b
A
B
C

595.337.14 (116.222) (425.72:162.002.51): 551.312

ON *TIMIRIASEVIA MACKERROWI* BATE

by R. G. Clements
(University of Leicester, England)

Timiriasevia mackerrowi Bate, 1965

1965 *Timiriasevia mackerrowi* sp. nov. R. H. Bate, *Palaeontology*, vol. 8, pp. 756-758, pl. 111, figs. 2-12.

non 1971 *Timiriasevia* cf. *mackerrowi* Bate; F. W. Anderson *in* F. W. Anderson & R. A. Bazley, *Bull. geol. Surv. Gt Br.*, 34, p. 133, figs. 12, 13.

Holotype: Brit. Mus. (Nat. Hist.) IO 2734, ♀ carapace.

Type locality: Old Cement Quarry, Kirtlington, Oxfordshire, England; Nat. Grid Ref.: SP 495200. Fimbriata-waltoni Clay (see Bate, op. cit.), White Limestone, Bathonian, Middle Jurassic.

Figured specimens: Brit. Mus. (Nat. Hist.) nos. IO 6270 (♀ LV: Pl. 2:20:118, fig. 1), IO 6271 (♀ RV: Pl. 2:20:118, fig. 2), IO 6272 (♀ RV: Pl. 2:20:118, fig. 3), IO 6273 (♀ LV: Pl. 2:20:120, fig. 4; Pl. 2:20:122, fig. 7; Pl. 2:20:124, fig. 1).

Explanation of Plate 2:20:118

Fig. 1, ♀ LV, ext. lat. (IO 6270, 710 µm long); fig. 2, ♀ RV, ext. lat. (IO 6271, 550 µm long); fig. 3, ♀ RV, ext. lat. (IO 6272, 550 µm long); fig. 4, ♂ RV, ext. lat. (IO 6276, 530 µm long); fig. 5, ♂ RV, ext. lat. (IO 6277, 530 µm long).

Scale A (100 µm ; ×120), fig. 1; scale B (100 µm ; ×80), figs. 2-5.

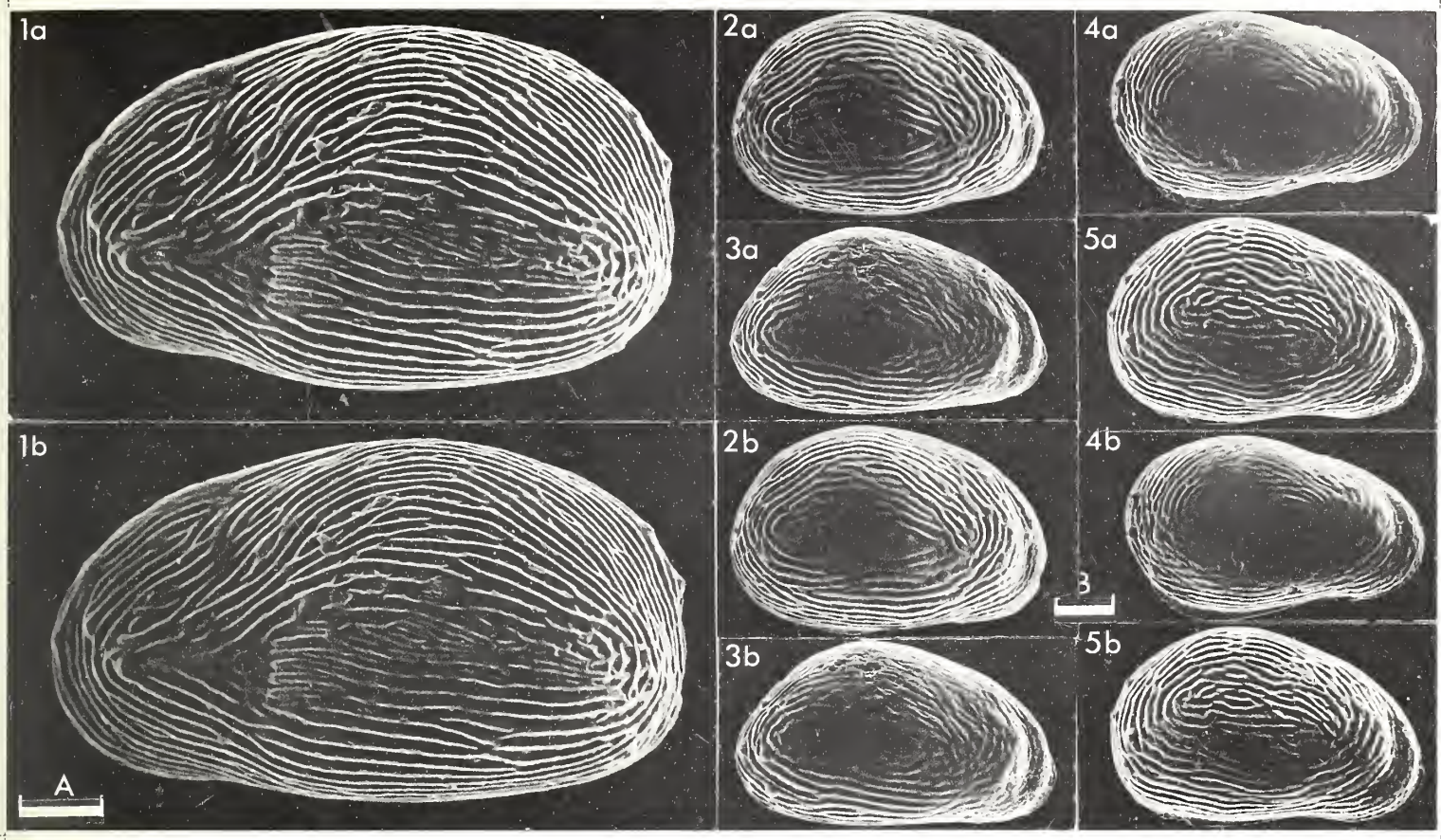
Figured specimens (contd.): IO 6274 (♀ RV: Pl. 2:20:120, fig. 5; Pl. 2:20:124, fig. 2), IO 6275 (♀ car.: Pl. 2:20:122, fig. 3), IO 6276 (♂ RV: Pl. 2:20:118, fig. 4), IO 6277 (♂ RV: Pl. 2:20:118, fig. 5), IO 6278 (♂ LV: Pl. 2:20:120, fig. 1), IO 6279 (♂ LV: Pl. 2:20:120, fig. 2), IO 6280 (♂ car.: Pl. 2:20:122, figs. 1, 5), IO 6281 (♂ car.: Pl. 2:20:122, fig. 2), IO 6282 (♂ car.: Pl. 2:20:122, fig. 6), IO 6283 (♂ RV: Pl. 2:20:124, fig. 3), IO 6284 (♂ RV: text-fig. 1), IO 6285 (juv RV: Pl. 2:20:120, fig. 3), IO 6286 (juv car.: Pl. 2:20:122, fig. 4). All from same sample as measured specimens, Forest Marble, Elm Farm Quarry.

Diagnosis: *Timiriasevia* with greatest height distinctly posterior. Anterior marginal sulcus. Costae rounded, sub-parallel to margins and roughly concentric about a sub-triangular to elongate mid-lateral region. Small, rounded, perforate tubercles particularly in anterior and posterior regions - the latter ones normally forming a pattern of four on each valve. About 20 radial pore canals from anterior vestibule. Anterior and posteroventral flanges marked. Right valve posteroventral flange extensive, frilled, oblique. Accommodation groove in left valve only. Sexual dimorphism strong; female with pouch-like posteroventral inflation beyond margin.

Explanation of Plate 2:20:120

Fig. 1, ♂ LV, ext. lat. (IO 6278, 610 µm long); fig. 2, ♂ LV, ext. lat. (IO 6279, 520 µm long); fig. 3, juv RV, ext. lat. (IO 6285, 370 µm long); fig. 4, ♀ LV, hinge (IO 6273); fig. 5, ♀ RV, hinge (IO 6274).

Scale A (100 µm ; ×120), fig. 1; scale B (100 µm ; ×80), fig. 2; scale C (100 µm ; ×110), fig. 3; scale D (100 µm ; ×108), fig. 4; scale E (100 µm ; ×180), fig. 5.


1a
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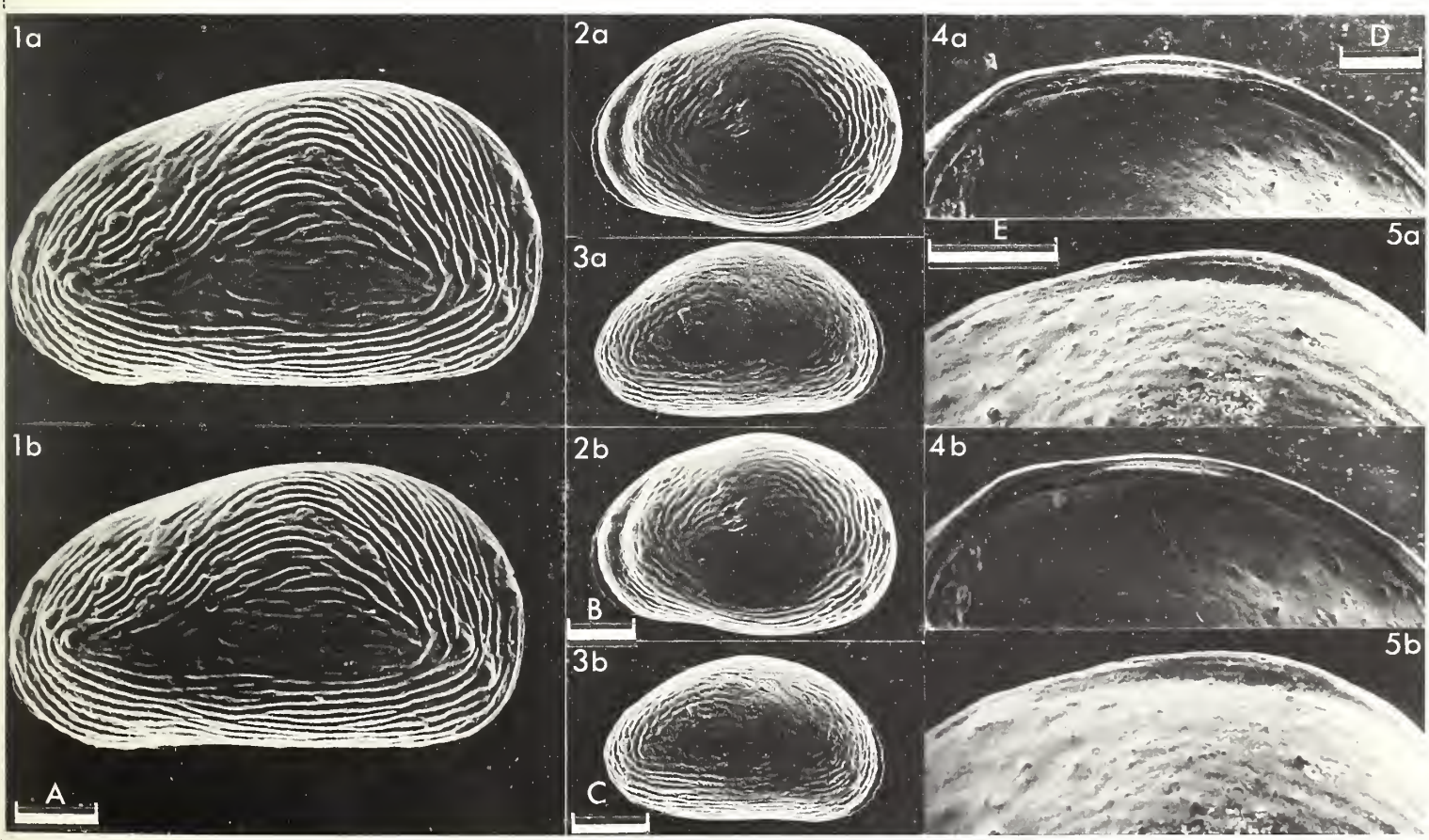
5b
A


1a
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D
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2b
4b
B
3b
5b
A
C

Remarks: Lateral outline variable - reflecting position of greatest height of carapace. Greatest height at or anterior to midline in juveniles. Strength of ornament varies; juveniles and a few adults develop a weak inter-costal punctation. Left valve larger than right valve. Females larger and apparently less numerous than males. Paratype IO 2737 described by Bate (op. cit.) as a juvenile is here considered an adult male. One sectioned female carapace contained a juvenile ostracod carapace. Presumed low salinity, non-marine; always found associated with other ostracods of similar presumed habitat (see Bate op. cit. and McKerrow *et al.*, 1969, *Palaeontology*, vol. 12, pp. 56-83).

Distribution: Upper Bathonian: Fimbriata-waltoni clay (White Limestone), Kemble Beds (Forest Marble), and horizons in the Wychwood Beds (Forest Marble) of the type locality; Forest Marble [Beds 9 and 10(a)] at Elm Farm Quarry, Stratton Audley, Oxfordshire, Nat. Grid Ref.: SP 601255 (see Palmer, T. J., 1973, *Proc. Geol. Ass.*, vol. 84, pp. 53-64).
Middle Bathonian: Viviparus Marl, Sharps Hill Beds, at Castle Barn Quarry, Sarsden, Oxfordshire; Nat. Grid Ref.: SP 300226.

Acknowledgement: To Prof. P.C. Sylvester-Bradley & Dr. R.H. Bate for loan of material.

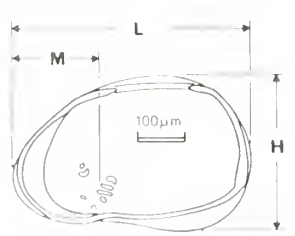
Explanation of Plate 2:20:122

Fig. 1, ♂ car., dors. (IO 6280, 570 µm long); fig. 2, ♂ car., vent. (IO 6281, 540 µm long); fig. 3, ♀ car., vent. (IO 6275, 570 µm long); fig. 4, juv car., dors. (IO 6286, 320 µm long); fig. 5, ♂ car., post. (IO 6280); fig. 6, ♂ car., post. (IO 6282, 490 µm long); fig. 7, ♀ LV, int. musc. sc. (IO 6273).

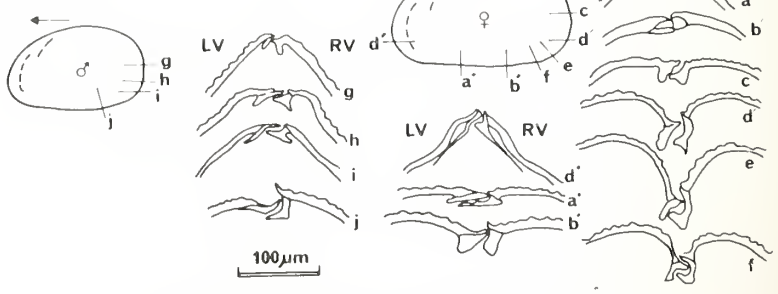
Scale A (100 µm ; ×70), figs. 1-3, 5, 6; scale B (100 µm ; ×114), fig. 4; scale C (50 µm ; ×375), fig. 7.

Sex	L (mm)					M (mm)			H (mm)					L/M			L/H		
	N	$\bar{x}$	SD	Max.	Min.	N	$\bar{x}$	SD	N	$\bar{x}$	SD	Max.	Min.	N	$\bar{x}$	SD	N	$\bar{x}$	SD
♀♀ RV	21	0.551	0.035	0.62	0.38	15	0.208	0.007	19	0.344	0.020	0.38	0.30	15	2.701	0.068	18	1.605	0.066
♀♀ LV	15	0.563	0.054	0.71	0.49	13	0.176	0.012	13	0.367	0.031	0.43	0.33	13	3.241	0.238	13	1.542	0.073
♂♂ RV	54	0.491	0.034	0.61	0.43	41	0.199	0.014	53	0.328	0.021	0.39	0.29	44	2.449	0.088	51	1.486	0.065
♂♂ LV	30	0.495	0.035	0.61	0.45	25	0.165	0.015	30	0.333	0.021	0.37	0.30	25	3.019	0.154	30	1.486	0.066

N = no. specimens; $\bar{x}$ = mean; SD = standard deviation.
Table 1. Measurements on a population from bed 10(a), (Palmer op. cit.), Forest Marble, Elm Farm Quarry.



Text-fig. 1. ♂ RV internal (IO 6284) showing muscle scars, and measured dimensions.

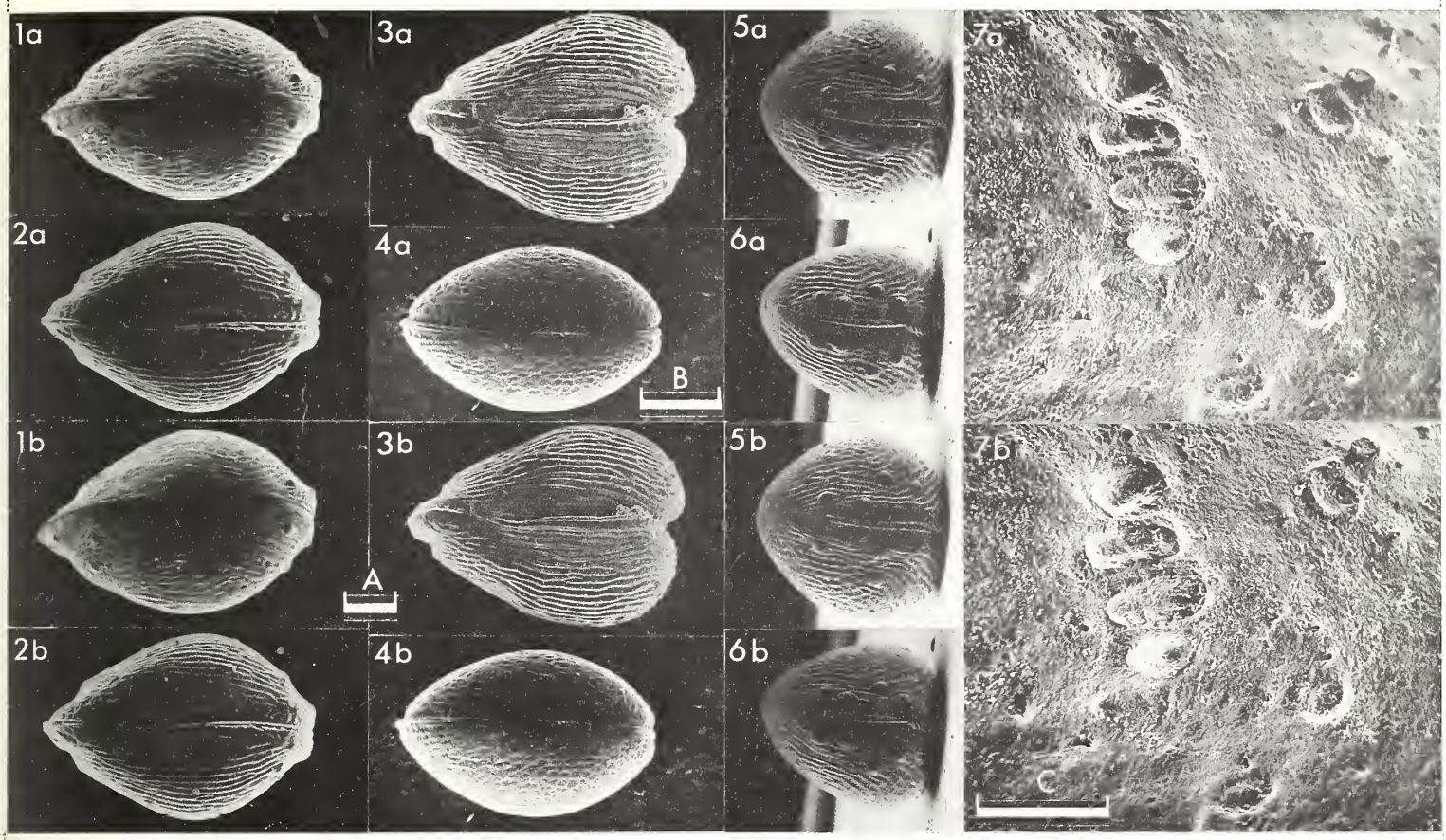


Text-fig. 2. Sections through a series of ♂ and ♀ carapaces to show structure of duplicature.

Explanation of Plate 2:20:124

Fig. 1, ♀ LV, int. lat. (IO 6273, 670 µm long); fig. 2, ♀ RV, int. obl. ventro-lat. (IO 6274, 540 µm long); fig. 3, ♂ RV, int. lat. (IO 6283, 540 µm long).

Scale A (100 µm ; ×100), figs. 1-3).


1a
3a
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7a
2a
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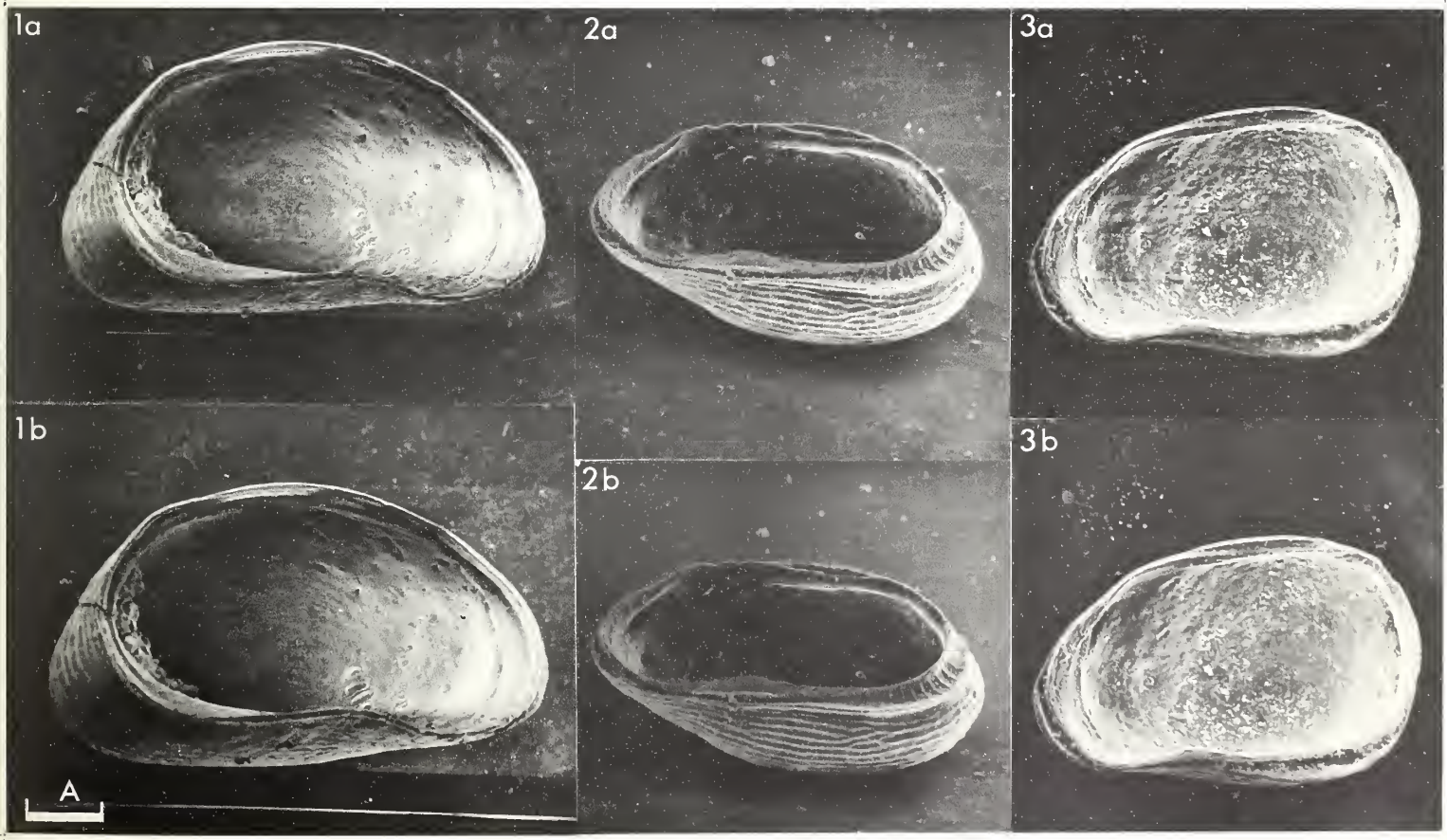
6a
B
1b
3b
5b
7b
A
2b
4b
6b
C


1a
2a
3a
1b
2b
3b
A

595.337.14 (116.333.3) (941:163.115.32): 552.54

ON *PENNYELLA PENNYI* NEALE gen. *et* sp. nov.

by John W. Neale
(University of Hull, England)

Genus *PENNYELLA* gen. nov.

Type-species: *Pennyella pennyi* sp. nov.

Derivation of name: In honour of my friend and colleague Dr. L. F. Penny.

Diagnosis: Shell of trachyleberid shape, saggital in dorsal view showing marked sexual dimorphism, strong reticulation with spinose muri and sparse normal pore canals. Four adductor scars, the middle two elongate, and hook shaped frontal scar. *Pennyella* differs from most other trachyleberids in lacking an eye tubercle.

Remarks: From *Agulhasina* Dingle, 1971 (Maastrichtian, Agulhas Bank) it differs in having almost twice as many radial pore canals (30 anteriorly 12 posteriorly), in the greatest width lying posteriorly and not centrally and in the muscle scar pattern. It lacks the ventral rib and rounded posteroventral outline in lateral view of *Agrenocythere* Benson, 1971 (Eocene-Recent).

Explanation of Plate 2:21:126

Fig. 1, ♀ LV, ext. lat. (HU.67.C.1, 558 µm long); fig. 2, ♀ LV, int. lat. (HU.67.C.5, 603 µm long).

Scale A (100 µm ; ×181), fig. 1; scale B (100 µm ; ×156), fig. 2.

Pennyella pennyi sp. nov.

Holotype: University of Hull coll. no. HU.67.C.1, ♀ LV.
[Paratypes: University of Hull coll. nos. HU.67.C.2-10].

Type locality: One Tree Hill, Gingin, Western Australia; approx. long. 115°52'E, lat. 31°32'S. Santonian, Upper Cretaceous. Fine white chalk with an abundant foraminiferal and ostracod fauna indicative of warm shelf seas.

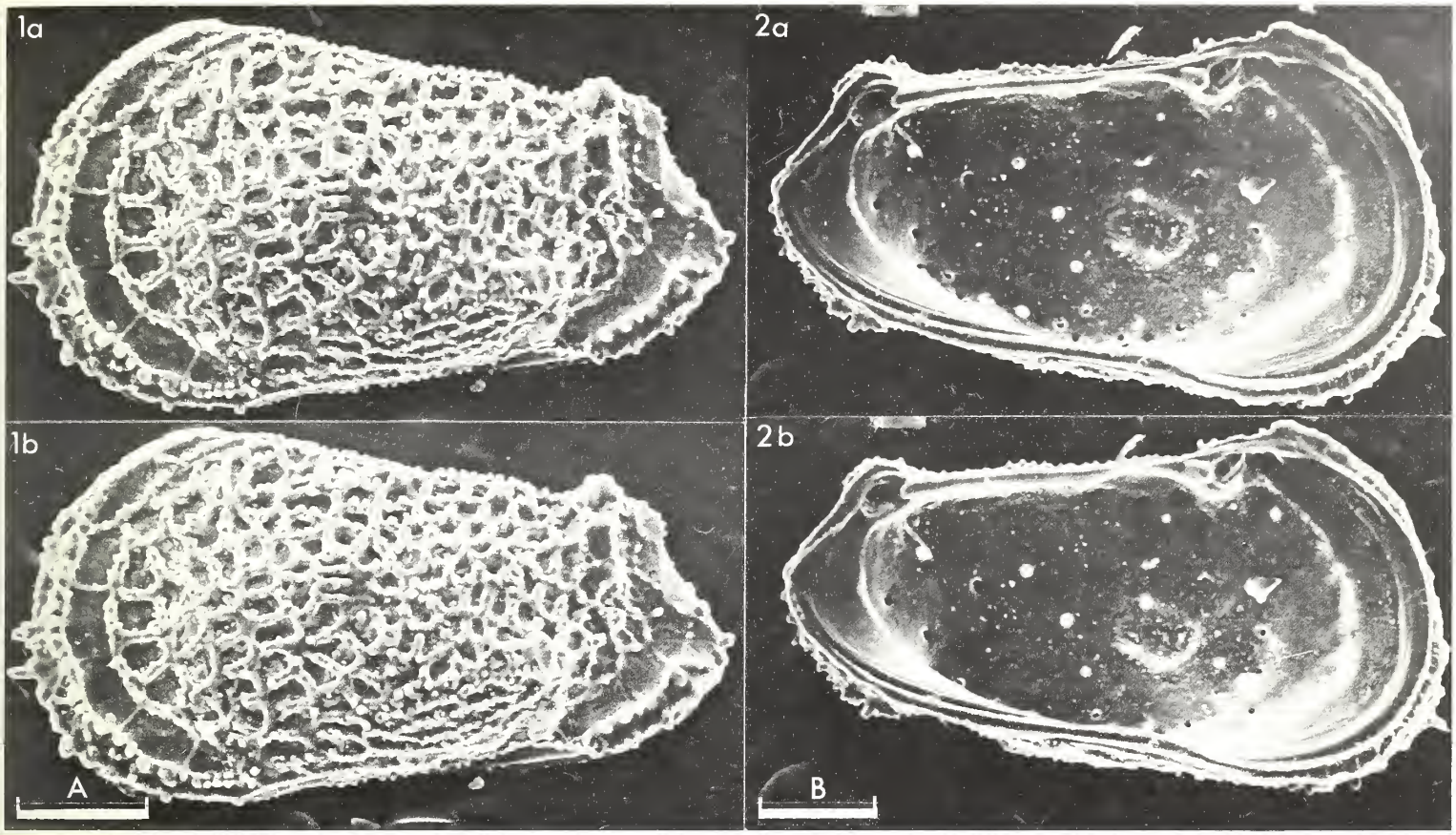
Figured specimens: University of Hull coll. nos. HU.67.C.1 (♀ LV: Pl. 2:21:126, fig. 1; Pl. 2:21:132, fig. 1), HU.67.C.2 (♂ RV: Pl. 2:21:128, fig. 3; Pl. 2:21:132, fig. 3), HU.67.C.3 (♀ RV: Pl. 2:21:132, fig. 2), HU.67.C.4 (♂ RV: Pl. 2:21:130, fig. 1), HU.67.C.5 (♀ LV: Pl. 2:21:126, fig. 2), HU.67.C.9 (♀ LV: Pl. 2:21:128, fig. 2), HU.67.C.10 (♀ RV: Pl. 2:21:128, fig. 1; Pl. 2:21:130, fig. 2). All from the Gingin Chalk, Western Australia.

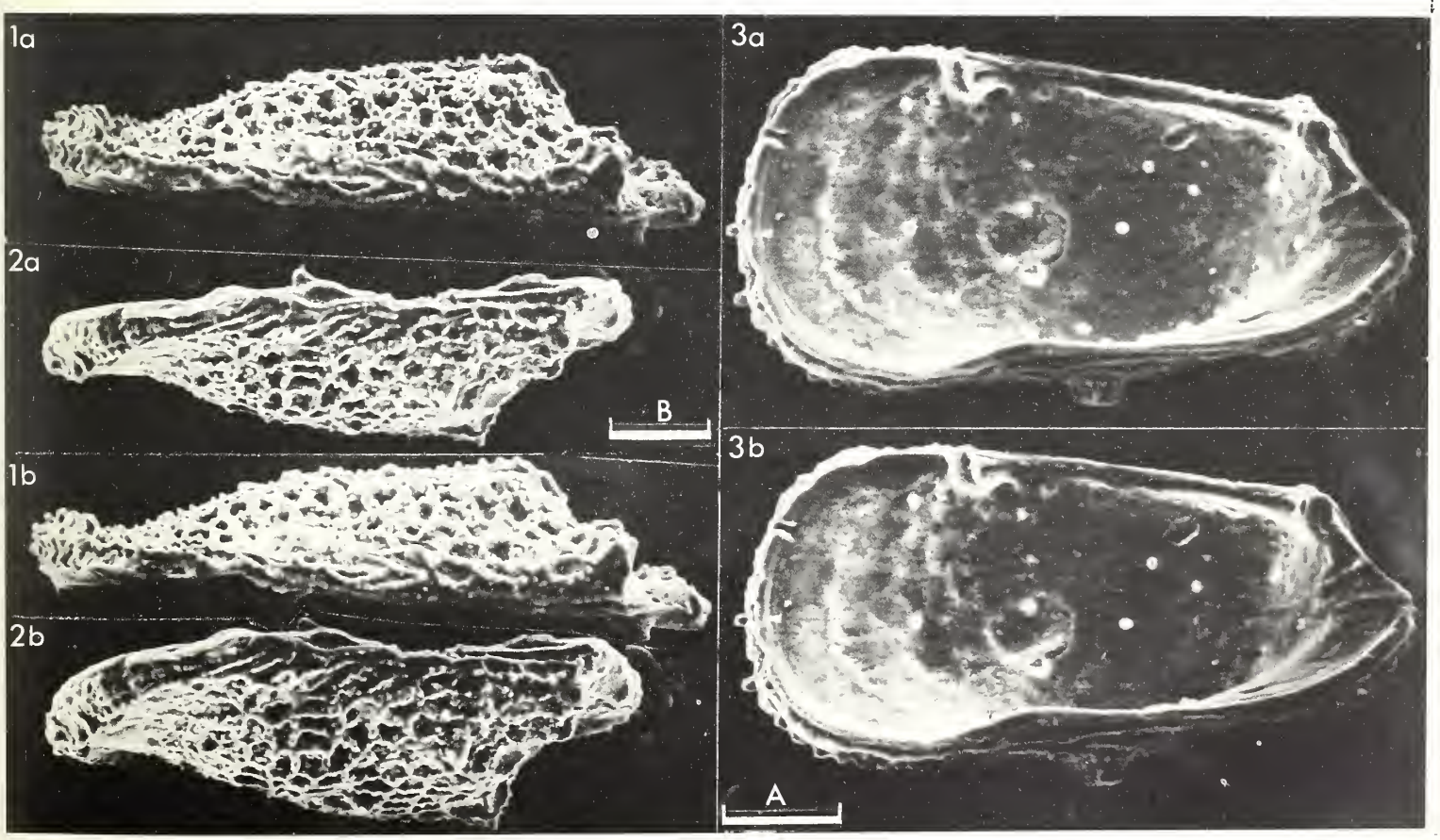
Diagnosis: Anterior and posteroventral margins separated from the body of the valve by well-developed sulci divided by very fine transverse ribs.

Explanation of Plate 2:21:128

Fig. 1, ♀ RV, ext. dors. (HU.67.C.10, 610 µm long); fig. 2, ♀ LV, ext. dors. (HU.67.C.9, 584 µm long); fig. 3, ♂ RV, int. lat. (HU.67.C.2, 610 µm long).

Scale A (100 µm ; ×158), figs. 1, 3; scale B (100 µm ; ×143), fig. 2.


1a
2a
1b
2b
A
B


1a
3a
2a
B
1b
3b
2b
A

Remarks: So far this species has only been found in the Gingin Chalk where it makes up about 1% of the fauna and its commonest associates are *Cytherella, Cytherelloidea, Apateloschizocythere* and *Paramunseyella*.

The genus is more widespread. The form assigned by Swain (1973, *J. Paleont.*, vol. 47, no. 4, p. 713, pl. 1, figs. 12, 13a-c) to *Cletocythereis* ? from Maastrichtian in a core from the Shatsky Plateau in the Pacific at long. 158°01.3'E, lat. 32°34.5'N belongs here. Swain's specimens are larger than adult *P. pennyi* but also show the vertical ridge posteriorly suggesting that this is also a feature of generic importance.

Text-fig. 1. Muscle scar pattern in *P. pennyi*.

1a Left valve 1b Right valve

Explanation of Plate 2:21:130

Fig. 1, ♂ RV, ext. lat. (HU.67.C.4, 603 µm long); fig. 2, ♀ RV, ext. lat. (HU.67.C.10, 610 µm long).

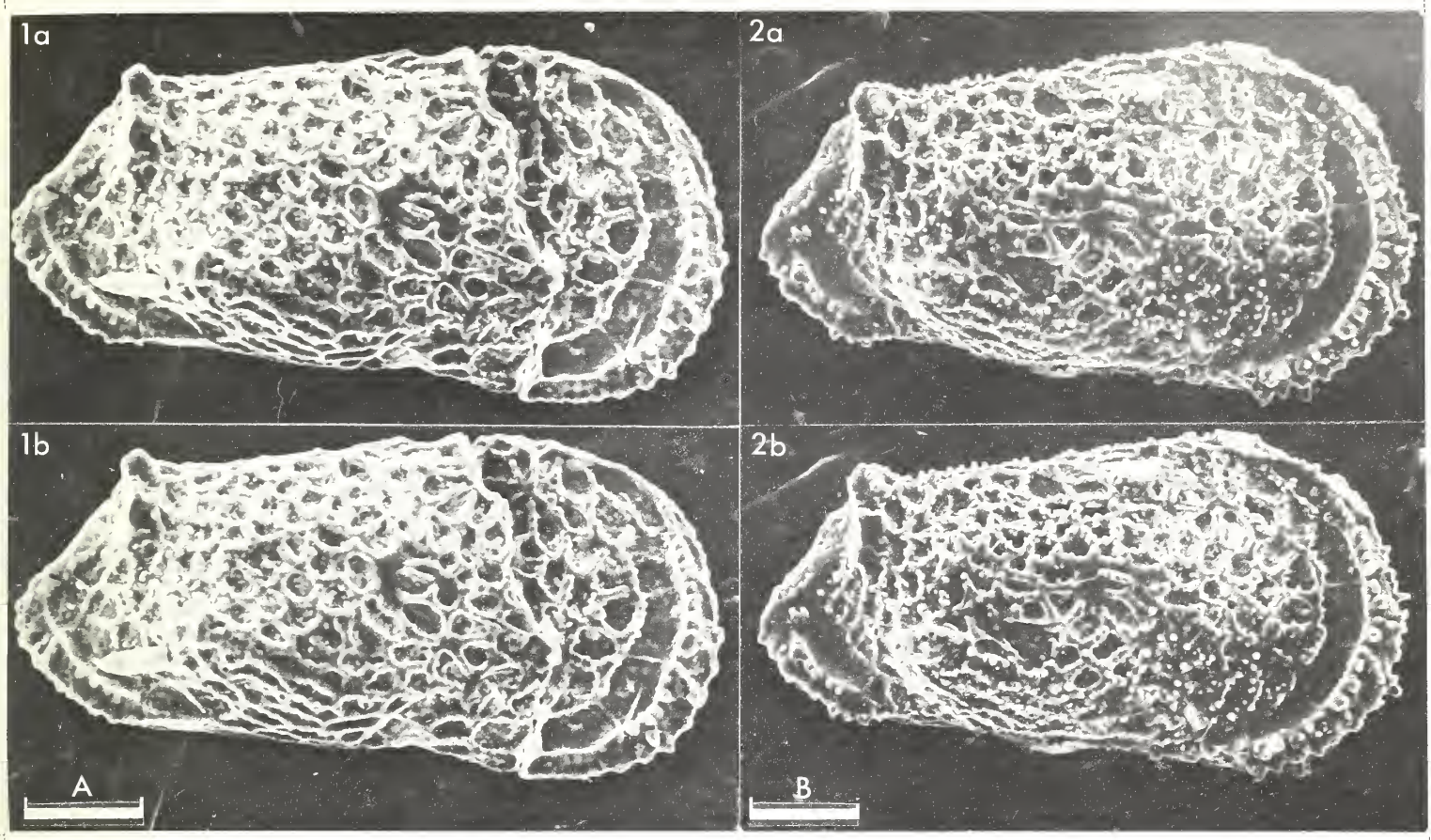
Scale A (100 µm ; ×166), fig. 1; scale B (100 µm ; ×152), fig. 2.

Explanation of Plate 2:21:132

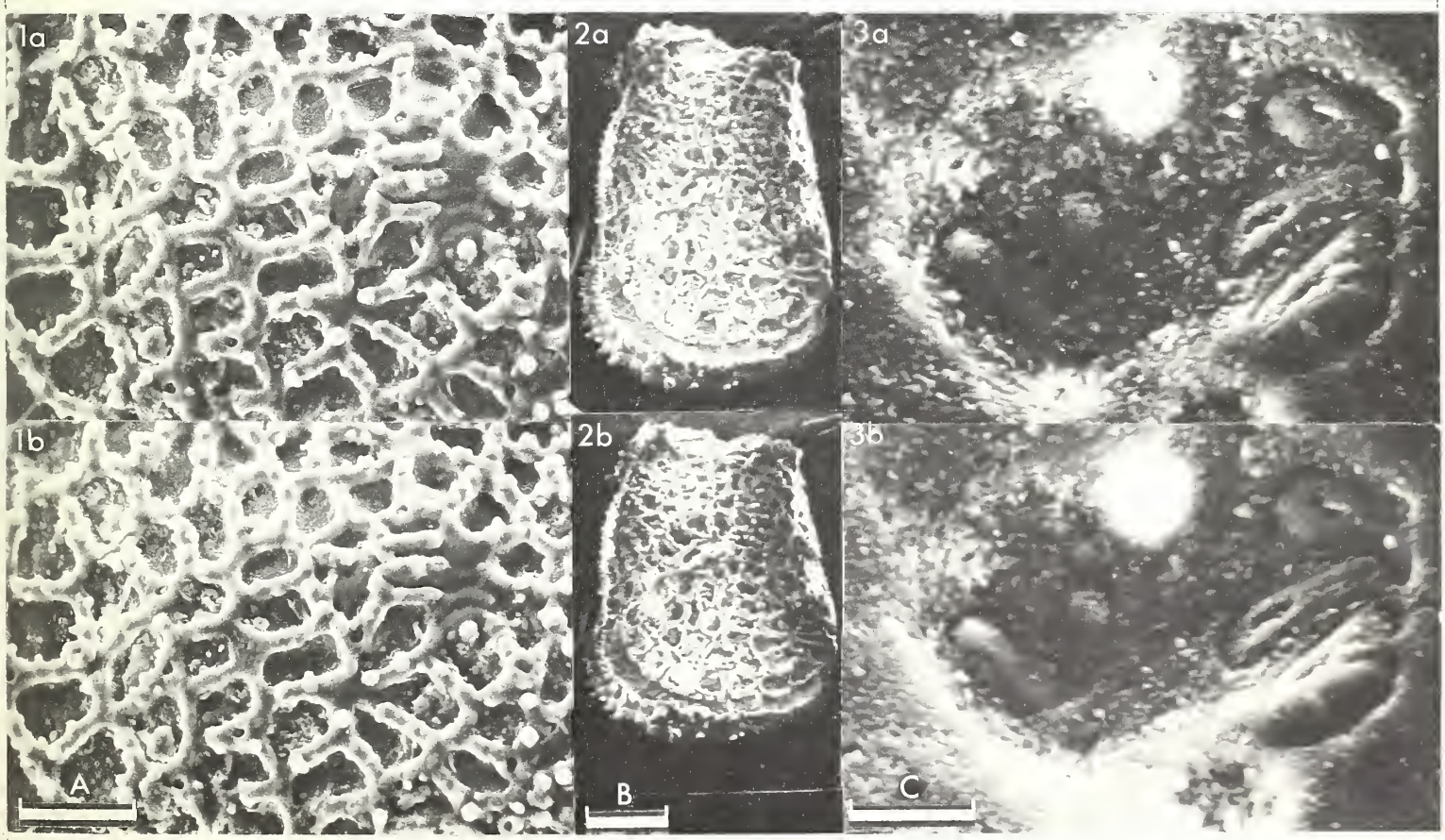
Fig. 1, ♀ LV, ext. lat. to show ornamentation, normal pore canals & musc. sc. (HU.67.C.1); fig. 2, ♀ RV, ext. ant. obl. (HU.67.C.3, 584 µm long); fig. 3, ♂ RV, int. musc. sc. (HU.67.C.2, 610 µm long).

Scale A (50 µm ; ×325), fig. 1; scale B (100 µm ; ×114), fig. 2; scale C (20 µm ; ×890), fig. 3.

Stereo-Atlas of Ostracod Shells, 2:21:130 *Pennyella pennyi* (6 of 8)



Stereo-Atlas of Ostracod Shells, 2:21:132 *Pennyella pennyi* (8 of 8)



595.337.14 (119.1) (262.3:161.017.41 + 262.3:161.018.41): 551.352

ON *BATHYCYTHERE VANSTRAATENI* SISSINGH

by W. Sissingh
(Shell U. K. Exploration & Production Co. Ltd., London)

Genus *BATHYCYTHERE* Sissingh, 1971

1971 *Bathycythere* gen. nov. W. Sissingh, *Proc. K. ned. Akad. Wet.*, Amsterdam, ser. B, 74, no. 4, p. 409.
1971 "*Xandarosina*". R. H. Benson & P. C. Sylvester-Bradley, *Bull. Cent. Rech. Pau - SNPA*, vol. 5 suppl., pp. 63-91 [*nomen nudum*].

Type-species (original designation): *Bathycythere vanstraateni* Sissingh, 1971

Diagnosis: Subovate to subrectangular carapace with prominent marginal and ventrolateral spines. No eye tubercle. Bulbose radial pore canals. Weak holamphidont hinge.

Explanation of Plate 2:22:134

Figs. 1-3, RV (IO 6267, 1130 µm long). Fig. 1, ext. ant.; fig. 2, ext. lat.; fig. 3, ext. vent. obl.

Scale A (250 µm ; ×57), figs. 1-3.

Bathycythere vanstraateni Sissingh, 1971

1971 *Bathycythere vanstraateni* sp. nov. W. Sissingh, *Proc. K. ned. Akad. Wet.*, Amsterdam, ser. B, 74, no. 4, p. 410, pls. 1, 2, text-figs. 2-4.
1971 "*Xandarosina*" sp. R. H. Benson & P. C. Sylvester-Bradley, *Bull. Cent. Rech. Pau - SNPA*, vol. 5 suppl., p. 69, figs. 3a, b.

Holotype: A left valve, deposited in the micropalaeontological collections (S 27532) of the University of Utrecht.

Type locality: Core 355 (interval 240-270 cm), taken in the deep basin of the SE Adriatic Sea at a depth of 1096 m; approx. long. 18°25'E, lat. 41°30'N. Late Pleistocene.

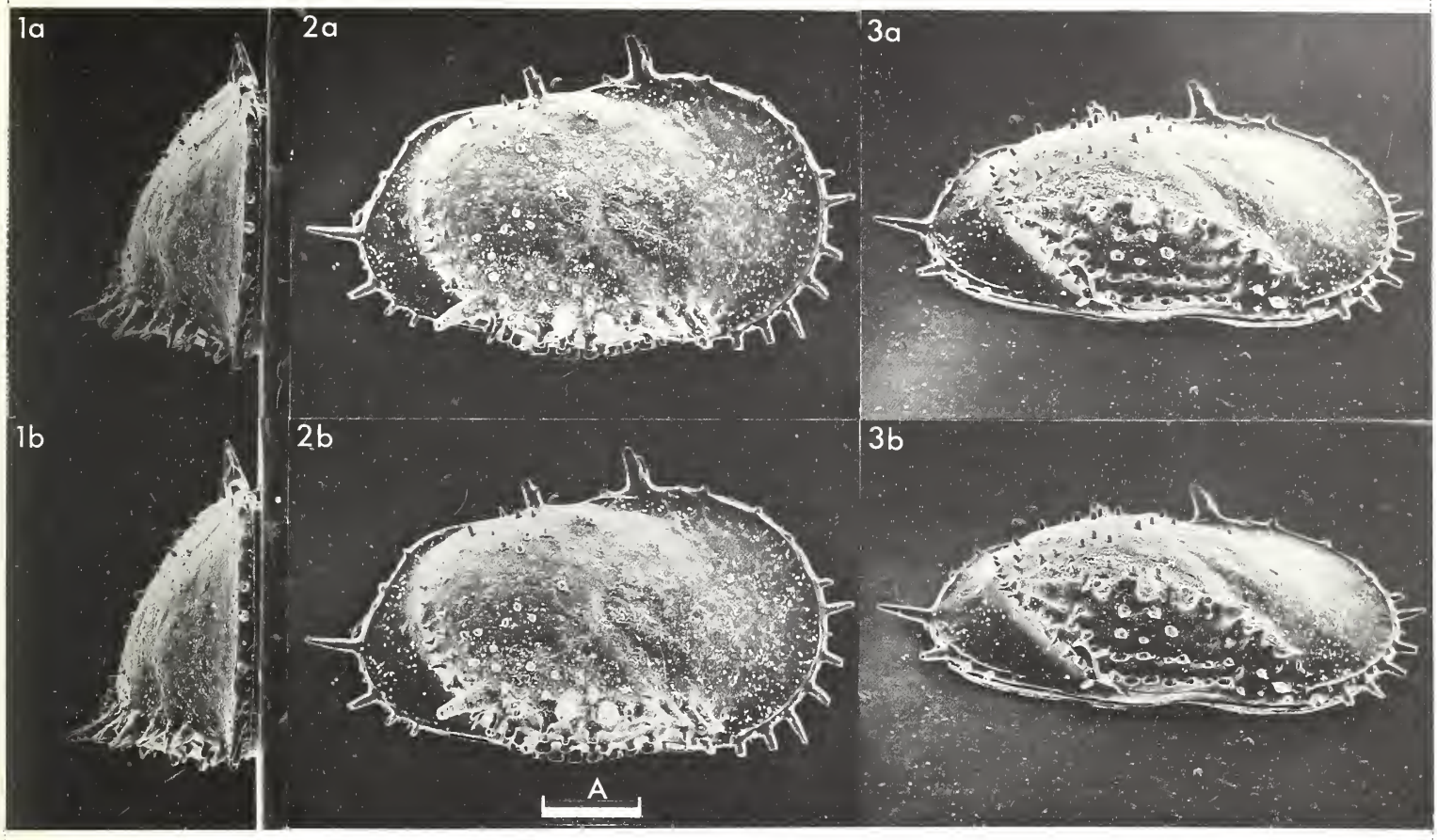
Figured specimens: Brit. Mus. (Nat. Hist.) IO 6267 (RV: Pl. 2:22:134, figs. 1-3; Pl. 2:22:138, fig. 1; Pl. 2:22:140, figs. 1, 2), IO 6268 (LV: Pl. 2:22:136, figs. 1-3), IO 6269 (LV: Pl. 2:22:138, figs. 2, 3; Pl. 2:22:140, figs. 3, 4).

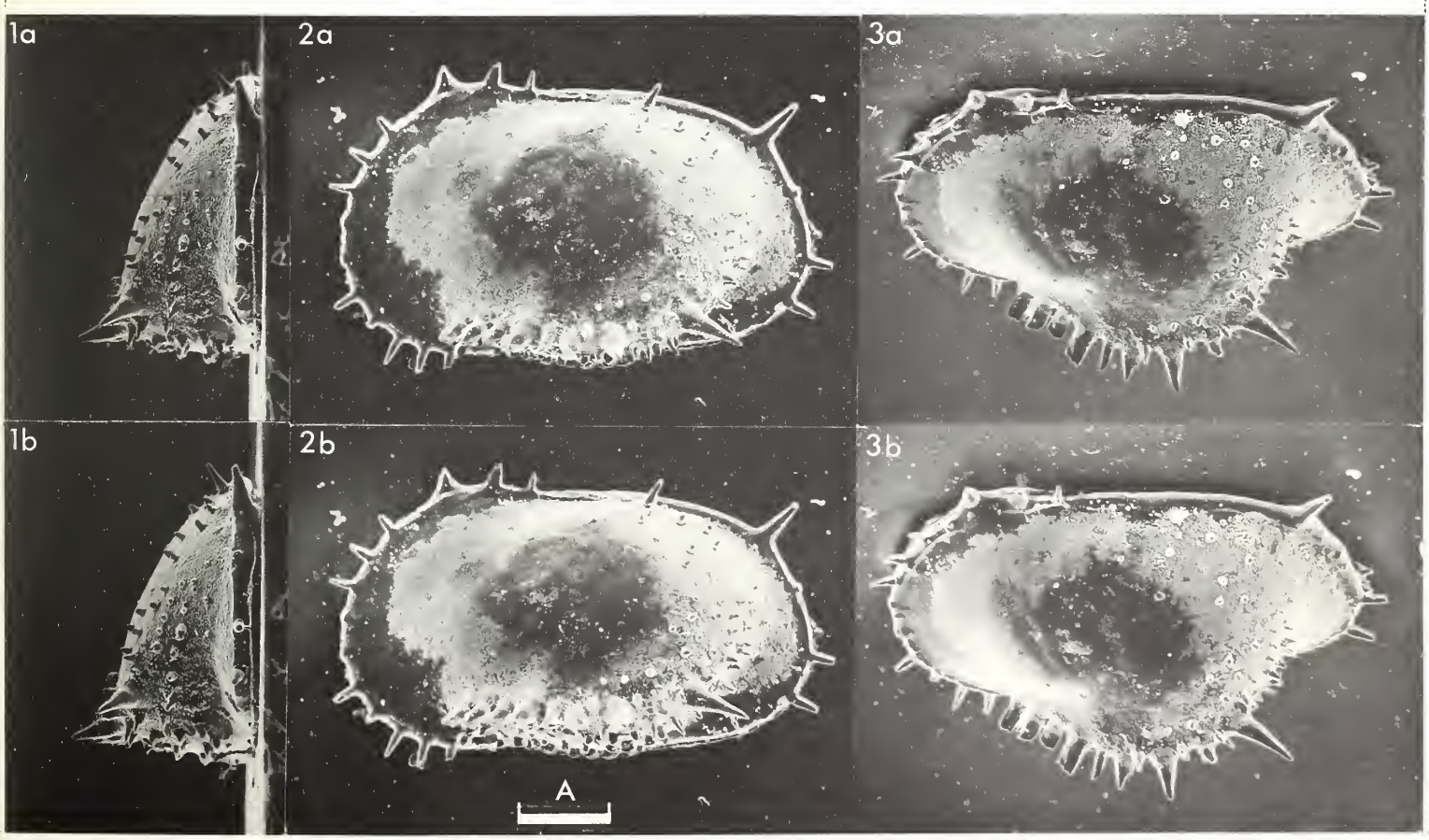
IO 6267 and IO 6268 from Core 296 (interval 330-360 cm and 400-440 cm respectively); taken from 1063 m depth at approx. long. 17°43'E, lat. 41°16'N. IO 6269 from Core 293 (interval 80-110 cm); taken from 1198 m depth at approx. long. 18°9'E, lat. 41°44'N. All specimens are from late Pleistocene subsurface deposits within the area of the type locality.

Explanation of Plate 2:22:136

Figs. 1-3, LV (IO 6268, 1220 µm long). Fig. 1, ext. post.; fig. 2, ext. lat.; fig. 3, ext. dors. obl.

Scale A (250 µm ; ×53), figs. 1-3.


1a
2a
3a
1b
2b
3b
A


1a
2a
3a
1b
2b
3b
A

Diagnosis: Anterior part of lateral surface smooth; spinose ventrolaterally and posteriorly.

Remarks: Sexual dimorphism is not convincingly observed in this species. Presumed males seem to be somewhat smaller, relatively lower and slightly more compressed in dorsal view than females. Dorsomedian and ventromedian adductor muscle scar may be subdivided (see Pl. 2:22:138, fig. 3 & text-fig. 1).

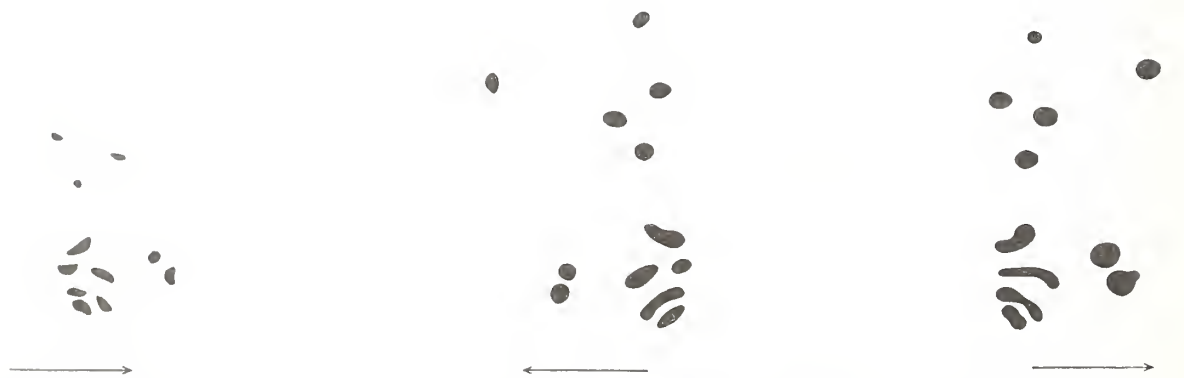
Distribution: Late Pleistocene of the deep SE Adriatic Sea.
Also reported as a species of "*Xandarosina*" (*nomen nudum*) from Pleistocene and younger deep water deposits of the Mediterranean Sea (Benson, R. H. & Sylvester-Bradley, P. C., op. cit.).

Explanation of Plate 2:22:138

Fig. 1, RV int. lat. (IO 6267); fig. 2, LV int. lat. (IO 6269, 1130 µm long); fig. 3, LV int. musc. sc. (IO 6269).

Scale A (250 µm ; ×57), figs. 1, 2; scale B (50 µm ; ×200), fig. 3.

Text-fig. 1. Muscle scar pattern in *B. vanstraateni*; after Sissingh (op. cit.). ×115.



1a Juvenile left valve

1b Adult right valve with divided dorsomedian adductor muscle scar

1c Adult left valve with undivided dorsomedian adductor muscle scar

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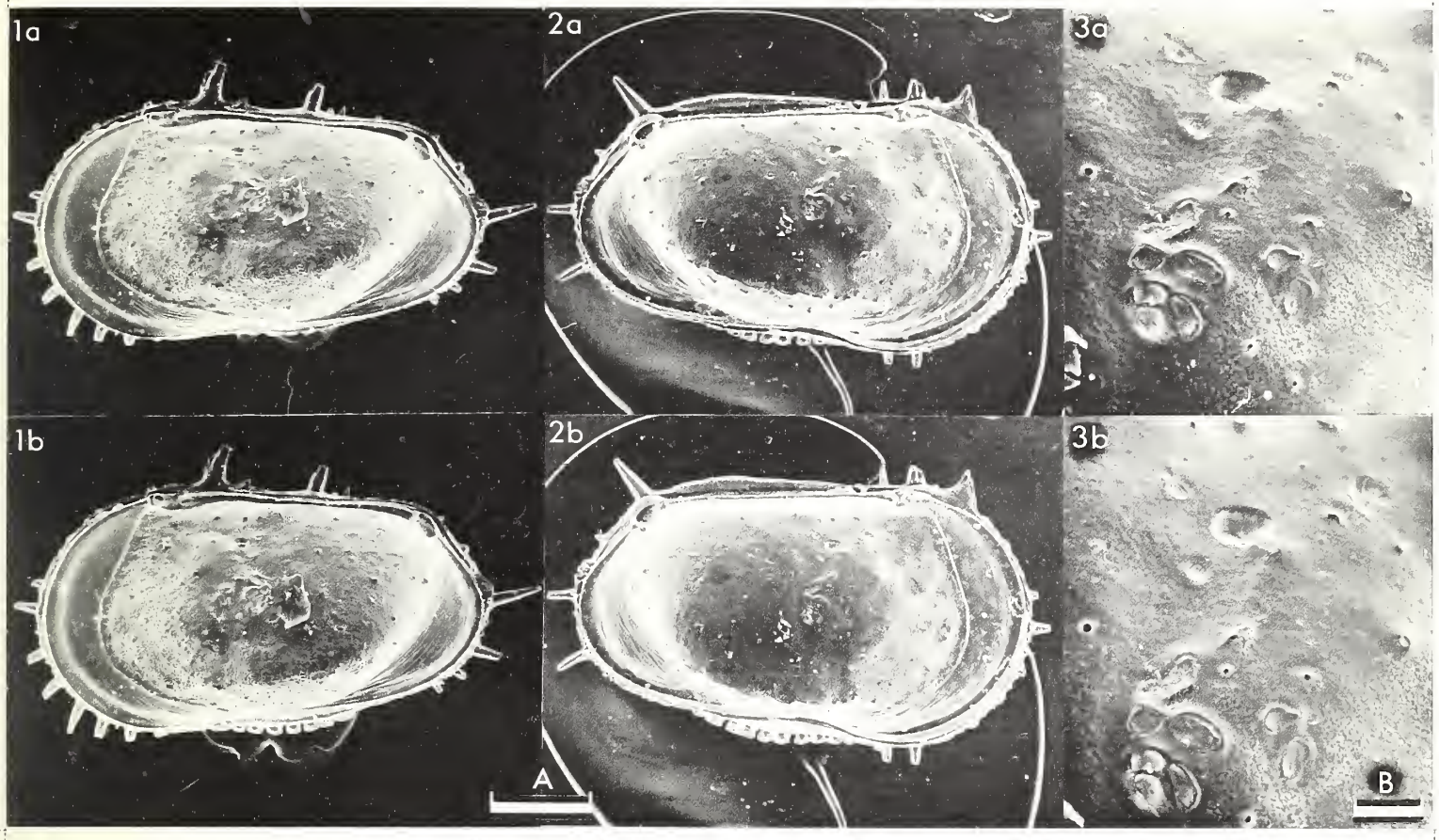
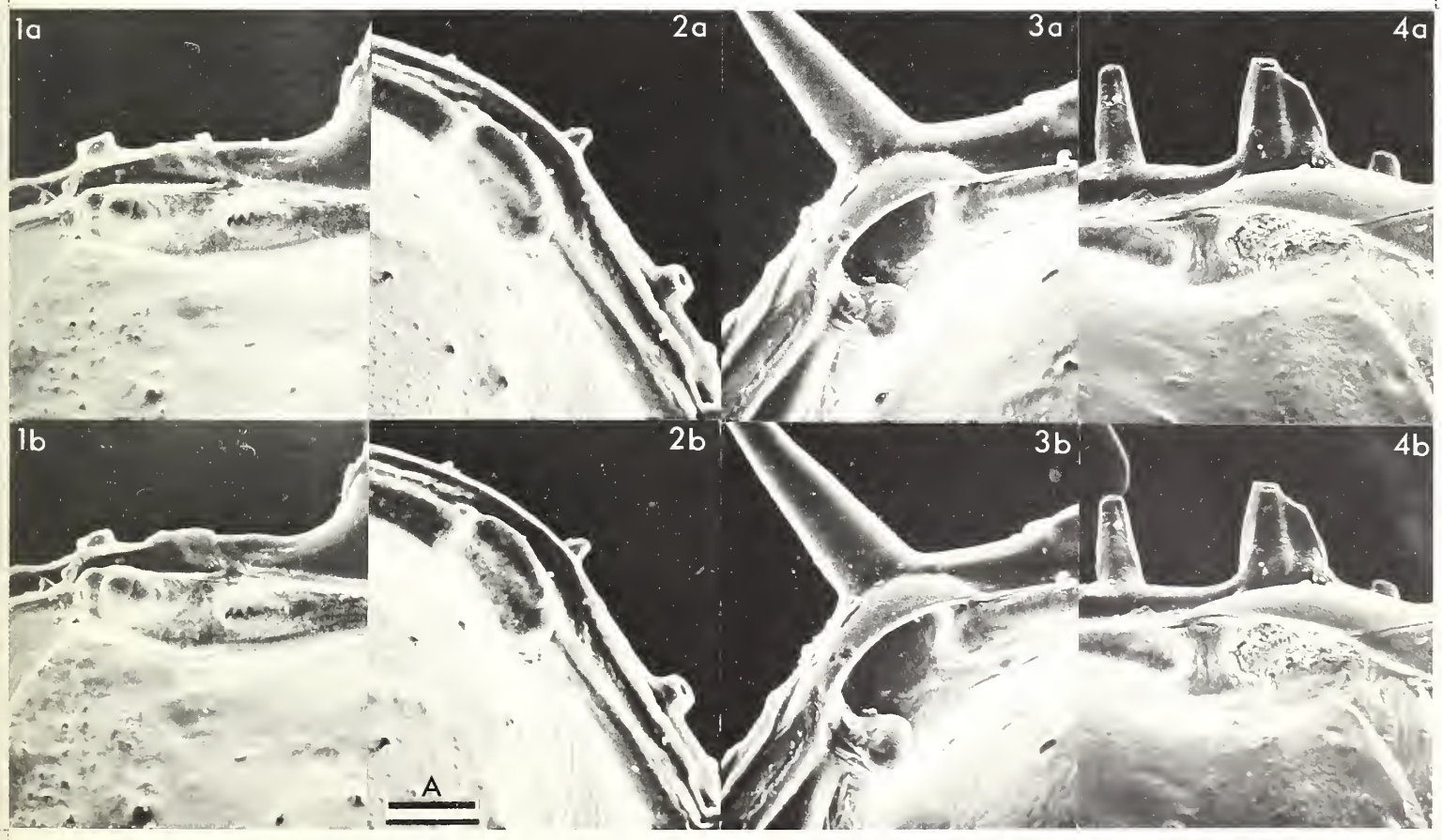
Explanation of Plate 2:22:140

Figs. 1, 2, RV int. details of terminal hinge elements (IO 6267); figs. 3, 4, LV int. details of terminal hinge elements (IO 6269).

Scale A (50 µm ; ×265), figs. 1-4.


1a
2a
3a
1b
2b
3b
A
B


1a
2a
3a
4a
1b
2b
3b
4b
A

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